

UNIVERSITY MICROFILMS
313 N FIRST ST
ANN ARBOR MICH

CONDITIONING
RATION
Industry

NEWS

Vol. 79, No. 4, Serial No. 1,436

September 24, 1956

Published every Monday
450 West Fort St., Detroit 26, Michigan
Established 1926

Member
Associated
Business
Publications
ABP
ABC
Member
Audit
Bureau of
Circulations

Reentered as second class matter October 3, 1936 at the post office at Detroit, Mich., under the Act of March 3, 1879.

Trade Mark Registered U. S. Patent Office. Copyright 1956, by Business News Publishing Co.

Inside Dope

By GEORGE
F. TAUBENECK



Learn to live and laugh —
thus delay your epitaph

Proudest Father

World Series Time!
More Baseball Stories
Newspaper Boners
Here's Where He Came In
Oddities of the Year
Enter Our Industry
Original Lou

Proudest Father

No doubt the proudest father (as of this moment) in our industry is Kenneth McCormick of the Jackson Hopkin Co. (contractor) in Bakersfield, Calif.

Mr. McCormick's son, Mike, has been signed by the New York Giants for a \$60,000 bonus. Mike, a southpaw pitcher of tremendous promise, was wooed by 14 other major league clubs.

World Series Time!

And that timely note reminds us "that it's World Series time again. Herewith, then, comes another collection of baseball anecdotes—a traditional "Dope" at this time of the year.

"Ever been on television, Phil?" Scooter Rizzuto was asked early this year (he retired recently).

"Yep. Almost every day. I do a juggling act at Yankee Stadium."

July 31, 1956, Billy Martin of the Yanks was credited with a strange home run.

His liner to the left field fence was caught by Cleveland's Al Smith, who then toppled over the fence . . . and dropped the ball.

At Cooperstown, N. Y., home of baseball's Hall of Fame shrine, there's an annual Hall of Fame game. Conditions at the park are strictly "bush."

For example, in 1956 (N.Y. Giants vs. Detroit Tigers) fielder Al Kaline chased a long fly ball. Caught it, too—after crashing into a cart of soft drinks pushed by a girl peddler.

Neither Al nor the girl were hurt, but there was a lot of broken glass in the outfield.

Try to top this: A Sally League outfielder struck out, but scored a run before the next batter completed his turn!

Junior Reedy of Columbia whiffed (Aug. 7, 1956) but made first when Augusta's catcher Walt Streuli lost the third strike. An attempted pick-off went awry, and Reedy

(Concluded on Page 8, Col. 1)

'54 Census Data On Refrigeration Shows 71% Rise

WASHINGTON, D. C.—During 1954, value added by manufacture in the refrigeration machinery industry topped the billion dollar mark and increased 71% over 1947.

This was disclosed in an advance report on results of the 1954 census of manufacturers conducted by the Bureau of the Census, U. S. Dept. of Commerce.

The advance report, issued recently by the bureau, presents its data in three tables. These are published on pages 24, 25, and 26 of this issue. All figures are preliminary, the bureau advises, and are subject to revision in the final industry bulletin.

All comparisons are made with 1947, the year of the last official census of manufacturers.

"Value added by manufacture," the yardstick used by the bureau to measure the industry, is defined as the difference between the cost of materials, etc., and the value of shipments.

It is used, the bureau said, to avoid the duplication in the value of shipments which re-

(Concluded on Back Page, Col. 1)

'56 Retail Room Unit Sales Hit 1,500,000; Changes Mark Carrier, Fedders '57 Lines

Fedders Offers Mfr., Distributor Room Unit for Wall, Window

NEW YORK CITY—A new 1957 "Thin-Lo" line of room air conditioners adaptable for either window or through-the-wall installation was introduced to distributors here by Fedders-Quigan Corp.

Fedders also showed the distributors low-priced central air conditioners of 2-hp. capacity designed for the mass residential and commercial markets.

Featured in each cabinet size is a ¾-hp. 7½-amp. model for low voltage applications and a 1-hp. heat pump model that automatically defrosts itself. The "Customatic" heat pump model in the Series A cabinet is equipped with a manually adjustable thermostat.

The 1957 Thin-Lo units are housed in two sizes of cabinets, both 16 in. high and 27 in. wide.

(Concluded on Page 4, Col. 2)

Aug. 31 Inventory Set at 376,000

WASHINGTON, D. C.—Total retail sales of room air conditioners in 1956 will hit the long-sought goal of 1,500,000 units, according to estimates made by the Air-Conditioning & Refrigeration Institute.

Production of room air conditioners in the "room air conditioner production year" (Sept. 1, 1955 to Aug. 31, 1956) is estimated by AIR CONDITIONING & REFRIGERATION NEWS to have been close to the 1,675,000 unit mark.

Preliminary estimates by ARI of room unit inventories as of Aug. 31 in the hands of manufacturers and distributors at 376,000. This compares with an inventory figure of 240,000 units on the same date in 1955. The inventory gain amounts to 11% of retail sales, it was pointed out.

Following is a comparison of retail sales, and inventory carry-over in the past three years:

	1954	1955	1956
Retail Sales	970,000	1,300,000	1,500,000
Inventory (Aug. 31) ..	515,000	240,000	376,000

Last year the ARI made some spot surveys that indicated that

(Concluded on Back Page, Col. 4)

Philco Talking to Avco—'That's All'

PHILADELPHIA—James M. Skinner, Jr., president of Philco Corp., last week declined to comment on trade reports that his company is seeking to acquire Avco Mfg. Corp.'s Bendix Div. but he acknowledged that Philco has "talked with Avco and others about an arrangement of some kind whereby they (Avco) and others might make part of our laundry equipment."

Skinner added that a statement will be made "when it is

(Concluded on Back Page, Col. 3)

G-E Raises Prices on Larger Hermetic Motors

SCHENECTADY, N. Y.—The General Electric Co. has announced a price increase effective Oct. 1 on all hermetic motors to 7 in. diameter, rated from ½ hp. and above.

On the four-pole motors a uniform increase of 8% will apply. On the newer line of two-pole motors, the price increase ranges from a minimum of 8%.

Motors of this type are used in hermetically sealed compres-

(Concluded on Page 4, Col. 5)

Carrier Units Claim Lower Current Use

SYRACUSE, N. Y.—Carrier Corp. last week introduced for 1957 sale four completely new lines of room air conditioners including ¾ and 1-hp. models which "require substantially less electric current but at the same time produce full cooling capacity at standard conditions."

The company revealed a ¾-hp. unit requiring only 7½ amperes of current and a 1-hp. model for 115-volt household circuits "both with rated cooling capacities equivalent to conventional models calling for far greater current."

Also unveiled was a versatile new thin "Console Weather-maker" which can be installed below the window to project only 6 in. above the sill. Or it can be built into the wall without obstructing the window, and can be used to convert steam or hot water heating systems to year-round air conditioning, room by room, without ductwork.

At the same time, Cloud

(Concluded on Page 31, Col. 1)

NARDA Asks Probe of Prices to Builders

CHICAGO—The National Appliance & Radio-TV Dealers Association has asked the Federal Trade Commission to investigate builder sales practices in the appliance industry.

A. W. Bernsohn, NARDA managing director, in a letter to John W. Gwynne of the FTC, cited the "common practice in the appliance industry of singling out one classification of appliance purchaser, the builder, for prices appreciably lower than those charged another classification, the dealer, for identical merchandise."

Adjustment of the builder-dealer price differential, Bernsohn said, would "free many a

(Concluded on Page 4, Col. 1)

Emerson-Quiet Kool Ups 8 Room Unit Prices 3 to 5%

JERSEY CITY, N. J.—The prices of eight room air conditioners have been raised 3% to 5% by Emerson-Quiet Kool Corp., the air conditioner manufacturing subsidiary of Emerson Radio & Phonograph Corp., it has been announced by Stanley L. Abrams, Emerson-Quiet Kool president.

Abrams added that the increases, which were effective September 15, were made necessary because of higher costs of material.

BEHIND PAGE ONE . . .

Trouble-Shooting Air Conditioning Jobs

Basic Approach To Correcting 'Super-Chronic' Unit 6

Chill Tunnel for Frankfurters

Twenty-Minute Cooling Period Prevents Discoloring When Packaged 12

Air Force Residential Air Conditioning

Installing Year-Round Systems In 18 Officers' Quarters Offers Same Problems as Civilian Job 15

Refrigeration Machinery Sales

General Industry Statistics for '54 As Reported by U. S. Census Bureau 24

Servicing Weathertron Heat Pumps

Regular Features 28

Editorial 18 What's New 20

Refrigeration Problems 22 Patents 32

Purdue Announces Establishment of Refrigeration, Climate Control Center

LAFAYETTE, Ind.—Establishment of a Purdue University Center for Refrigeration and Climate Control, in which research will be conducted on both the design and application of air conditioning and refrigeration equipment, was announced Sept. 13 by Purdue's President Fred Hovde at a luncheon here.

Addressing a group from the air conditioning and refrigeration industry, the head of what is generally regarded as the best engineering school between the two coasts heralded the establishment of the Refrigeration Climate Control Center as a "dynamic contribution to the future of America."

Hovde asked for the cooperation and support of the indus-

try in equipping, staffing, and maintaining the activities of the Center, in a new concept of "cooperative effort between industry and places of higher learning."

In addition to basic scientific and engineering research for the air conditioning and refrigeration field, the Center will conduct studies in controlled environmental laboratory setups for both humans and farm animals, to improve human comfort and to increase animal productivity. Studies will also be made in the field of industrial air conditioning.

President Hovde also pointed out that the activities in the Center will have a "bonus"

(Concluded on Page 28, Col. 4)



ARI Committee Lays Plans for '57 Show

ARI's 10th Exposition Committee meets to consider plans for the 1957 Chicago Exposition. Left to right (seated) are R. H. Israel, Virginia Smelting Co., chairman of the group, and George E. Mills, ARI show director. Standing are guest Harry Katz, United Exposition Service Co.; D. C. McSorley, Jr., E. I. du Pont de Nemours & Co., Inc.; J. W. Krall, McCray Refrigerator Co.; J. K. Barnes, Carrier Corp.; Herman N. Goldberg, Standard Refrigeration Co.; James Emmett, Jr., Jas. P. Marsh Corp., committee vice chairman; and W. A. Siegfried, Superior Valve & Fittings Co.

Nashville Firm Holds New Plant Open House

NASHVILLE, Tenn.—Central Air Conditioning & Heating, Inc., held open house recently in its new plant on Thompson Lane in Sideco subdivision.

Cutaway production models of the latest residential and commercial air conditioning and heating equipment of Chrysler Airtemp Div. of the Chrysler Corp. were in operation for architects, engineers, contractors, purchasing agents, dealers, builders, and invited guests.

Air Conditioning Contracting Div. Set Up by Friedrich Unit

SAN ANTONIO—A complete commercial and residential heating and cooling contracting division, headed by Wallace Kerr, has been set up by Friedrich Commercial Distributing Corp.

Certified Rating Committee

Air Moving & Conditioning Assn. Program Aimed at Assuring User Highest Standards

CHICAGO — E. E. Trickler, highest standards of equipment vice president of sales, New York Blower Co., Chicago, and recently named national committee chairman of the Air Moving & Conditioning Association's Certified Rating Committee, recently revealed that his committee has undertaken "a project of vital importance to all the air moving and conditioning industry."

"That is: certified performance ratings for air moving equipment."

Trickler said the committee has been appointed by AMCA "to develop a program to assure the user of air moving and conditioning equipment of the

highest standards of equipment performance."

"To implement this program, AMCA is considering issuing a Certified Rating Seal, to both AMCA member and non-member companies whose products can qualify. The appearance of this seal on the equipment would indicate that it will operate according to published performance rating."

"In order to qualify for the Certified Rating Seal, the equipment manufacturer would have to prove to the association that he has complied with all test requirements, and that he is following prescribed procedures to assure maintenance of the performance rating."

"We are proposing to make annual inspections of laboratories at which tests are made from the standpoint of reliability of its equipment and methods as well as qualifying the laboratory initially."

"The association has two methods of qualifying a testing laboratory: (1) The 'Witness Method' which employs a qualified, neutral observer to witness the manufacturer's tests; (2) the 'Unknown Sample Verification Method' in which an actual unit is furnished by AMCA to the laboratory for testing. The unit being of unknown design demonstrates whether or not the manufacturer has proper testing facilities and personnel to duplicate the performance characteristics already known to AMCA."

A report on the Certified Rating Committee's projects will be presented at the annual meeting of the Air Moving & Conditioning Association this October, at the Greenbrier, White Sulphur Springs, W. Va.

Headquarters for the 51-member association are at 2159 Guardian Bldg., Detroit 26, Mich. Executive vice president is L. O. Monroe; assistant to executive vice president; Robert E. O'Rourke.

Former Airtemp Pres., David Russell, Dies

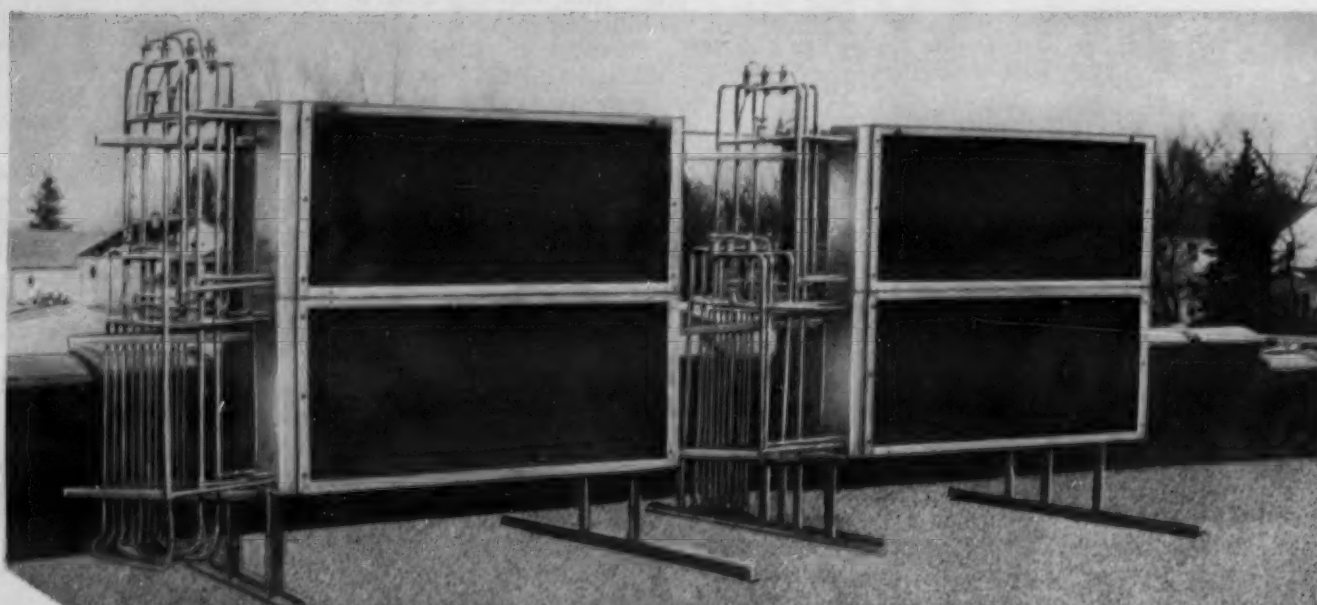
JACKSON, Tenn.—David W. Russell, 60, president of Airtemp Div., Chrysler Corp., Dayton, from 1940 to 1947, died recently in General hospital here.

He left Dayton to become vice president of McCauley-Russell Motor Co. in Jackson, his hometown. While in Dayton, he was on the board of directors of the Air Conditioning & Refrigerating Machinery Association and was a member of the American Society of Refrigerating Engineers.

He is survived by his wife and two sons.

Williamsburg Presbyterian Church Plans Air Conditioning

KINGSTREE, S. C.—A \$44,000 remodeling program now under way at the Williamsburg Presbyterian church will include the installation of air conditioning, according to David S. Epps, chairman of the building committee.



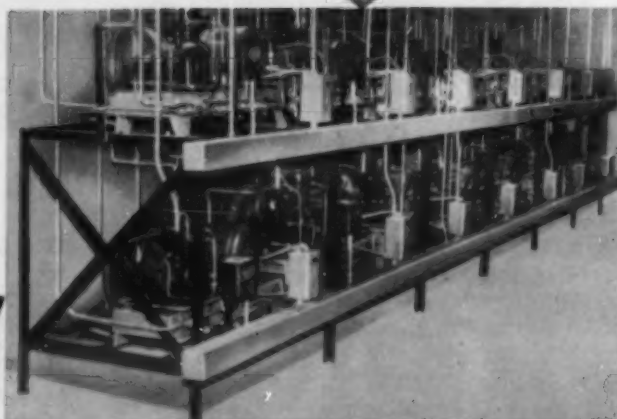
KRAMER

UNICON FOR SUPERMARKETS

**Serves 14 Compressors
Winter and Summer
WITHOUT ANY WATER***

Photographs of UNICON installation at Trimbors Supermarket, Hales Corner, Wisconsin

Installed by Real Refrigeration Sales and Service, Milwaukee, Wisconsin
Units furnished by Wisconsin Refrigeration Supply Company, Milwaukee, Wisconsin



WRITE FOR BULLETIN U-291

*UNICON is a Remote-Type Air-Cooled Condenser

KRAMER TRENTON CO. • Trenton 5, N.J.



Tecumseh COMPRESSORS

encompass **EVERY** refrigeration application!



OVER 75% OF ALL WINDOW COOLERS
USE *Tecumseh* COMPRESSORS



Model S1T16
1 H.P. — 9500 BTU*
F-22



Model S3N14
1/2 H.P. — 4350 BTU*
F-12



Model S2S16
1/2 H.P. — 6200 BTU*
F-12



Models
S7N16 — 3/4 H.P. — 7900 BTU*
S7R16 — 3/4 H.P. — 8900 BTU*
F-22



Model B7616
3/4 H.P. — 9150 BTU*
F-12



Model B74T16
Economy 2 H.P. — 19,500 BTU*
F-22



Model B32P16
1 1/2 H.P. — 18,500 BTU*
F-22



Models
B1613 — 1 H.P. — 10,700 BTU*
B1616 — 1 H.P. — 13,350 BTU*
F-22

HERE'S WHY To enable the window cooler manufacturers to broaden their market through better and more economical products, Tecumseh has consistently extended and improved its line of compressors for this application. Two factors were of prime importance: reducing compressor price and offering better performance over a wider range of sizes. Today, Tecumseh offers the window cooler manufacturer ten basic models, each pin-pointed to specific industry requirements.

Five models of single cylinder, internally spring mounted compressors range in size from 1/3 to 1 H.P. with BTU ratings from 4350 to 9500. The 1/3 and 1/2 H.P. models provide low cost compressors for window coolers designed for relatively small rooms and low current consumption. Two 3/4 H.P. models are available to supply what is now the largest unit volume segment of the market. Variations in tube locations and angles as well as provision for remote mounting of the capacitors are offered to allow manufacturing customers possible additional savings in assembly. Model S1T16 is the latest advancement in this line and will meet the National Electrical Code requirements for a 1 H.P., 115 volt, plug-in compressor. Customers desiring 1 H.P. capacity may now purchase a unit which will operate on 115 volt, single outlet service rather than the 230 volt service previously required. The customer savings in wiring costs as well as the more general availability of 115 volt service make this a very significant development in the extension of the window cooler market.

Five models of twin cylinder externally spring mounted compressors range in size from 3/4 H.P. to 1 1/2 H.P. with BTU ratings from 9150 to 19,500. Model B7616 is a full capacity 3/4 H.P. compressor for heavy duty applications. Model B1516 is a full capacity 1 H.P. compressor. Certain savings in auxiliary equipment may be made on installations not requiring full 1 H.P. capacity by using model B1613. Model B32P16 is a 1 1/2 H.P. compressor and model B74T16 may be used as an "Economy" 2 H.P. compressor where full 2 H.P. capacity is not required.

Each Tecumseh window cooler compressor is designed to comply with all codes regulating power factor and current limitations. Tecumseh offers window cooler manufacturers the most flexible and complete line of compressors available today. In addition, our advanced engineering keeps ahead of this fast moving market and assures each customer that he will benefit immediately from new developments.

For detailed information and specifications concerning Tecumseh hermetic compressors, write your nearest Tecumseh District Office today!

CONDITIONS:
*F-12 Figures based on:
180 psig head pressure
42 psig suction pressure
95° F. return gas
95° F. ambient
115° F. liquid temperature entering expansion valve
F-22 *Figures same conditions except:
300 psig head pressure
77 psig suction pressure

COMPLETE LINES — VOLUME PRODUCTION — PRICED RIGHT



OVER 25,000,000 COMPRESSORS IN USE TODAY

TECUMSEH PRODUCTS CO.

The World's Largest Producer of Compressors for the Refrigeration Industry

Tecumseh, Michigan
Marion, Ohio

EXPORT DEPT. - P.O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

For more information about products advertised on this page use Information Center, page 21.

NARDA Asks-- Fedders Offers Wall or Window Unit--

(Concluded from Page 1, Col. 5) manufacturer and distributor of appliances from the feeling that he must participate in an activity that is unfair to his most substantial customers, immoral and we feel and believe that upon investigation you will agree, illegal."

Bernsohn said this practice is aggravated even more by looseness of some manufacturer policing methods.

He charged that as a result, much merchandise sold at builder prices, ostensibly for use in new housing, finds its way into retail channels.

"This causes those dealers, buying from the agencies designated by the manufacturer to sell to them, to appear to be overcharging customers and to be placed at a serious competitive disadvantage," it was pointed out.

(Concluded from Page 1, Col. 5) The Series "A" cabinet, however, is 16 in. deep and the Series "B" cabinet 19 in. deep.

Series A cabinets also house standard $\frac{3}{4}$ and 1-hp. models.

Additionally featured in the Series B cabinet is a 1-hp., 115-volt model, with or without electronic filter. This model, announced last June, is designed for applications without 220-volt service. It is claimed to operate at 25% less cost than regular 208-230-volt models.

The Series B cabinet line further includes custom and deluxe $1\frac{1}{2}$ -hp. models.

In standard cabinet sizes, Fedders is repeating the 1956 $7\frac{1}{2}$ -amp. $\frac{3}{4}$ -hp. unit and offering a new 1-hp., 115-volt model, a 1-hp., 208-230-volt model, and a 2-hp. model. Standard case-unit units are $\frac{1}{2}$ and $\frac{3}{4}$ hp.

In central-type systems, Fed-

ders offers the 2-hp. "Transomatic" and "Adaptomatic" air-cooled units as part of its 1957 line. Both are equipped with pushbutton remote controls.

The Transomatic is designed for installation in store transoms. Duct work carries the refrigerated air the length of the store.

'Adaptomatic' Features

The Adaptomatic is designed to cool homes up to 1,200 sq. ft. in area. New ductwork can be installed or existing hot air furnace ducting can be used, the company said.

The Adaptomatic features pressurized condenser air whereby dual centrifugal blower wheels draw outside air to any desired location and a "Super F" cooling system consisting of heavy-duty 4-row evaporator and condenser coils.



LEFT: Pictured here is new Fedders $\frac{3}{4}$ -hp. "Thin-Lo" window air conditioner.

A 3-hp. version of the Adaptomatic will be available early in 1957, the distributors were told.

To go with its central air conditioners, Fedders will make available to dealers snap-on duct kits with components colored individually for identification; a green duct for return air, red for condenser discharge, and yellow for fresh air intake.

Separate kits are available for ceiling, crawl space, plenum, and attic installations.

'Uni-Mount' Compressor Suspended from One Point

In its $\frac{3}{4}$ and 1-hp., 115-volt room cooler models, Fedders has introduced a new "Uni-mount" compressor that is suspended from a single point to minimize vibration. Fedders is said to have applied for a patent on the single-cylinder compressor. It is manufactured for Fedders by Tecumseh Products Co.

All models feature louvered outer cabinets, with concealed "Weather Bureau" controls, and the rotating "Weather Wheel" which permits 360° control of air direction.

Salvatore Giordano, president and chairman of the board, told the distributors that with the Thin-Lo line, "1957 will be the year of Fedders' vigorous through-the-wall campaign."

ABOVE: New Fedders "Thin-Lo" room units can be installed through-the-wall. Claimed to be the smallest available, outer cabinets measure 16 in. high, 27 in. wide, and 16 in. deep.

ers, he said, will be mass produced, thoroughly merchandised, and distributed through channels heretofore unexploited.

Consumers, for the first time, he declared, will be able to buy a central unit from a retailer for as little as \$500, installation included.

G-E Price Hike--

(Concluded from Page 1, Col. 4) sors primarily for room and central air conditioners.

A similar price increase of 8% was announced July 16 on hermetic motors rated from $\frac{1}{2}$ through $\frac{1}{3}$ hp. which became effective Aug. 1.

If your prospect acts like this



suggest time payments



to clinch the sale



TODAY the demand on working capital is heavy. Preferring to keep their cash and usual lines of credit intact for current operations, more and more of your prospects will want to finance their purchases of equipment. Be sure your proposals are complete by including information about buying on the nationally

popular **COMMERCIAL CREDIT PLAN**. To discover how **COMMERCIAL CREDIT'S** tailor-made Refrigeration Financing Plan can help you build prestige and close sales, call our office in your city or write **COMMERCIAL CREDIT CORPORATION**, 14 Light Street, Baltimore 2, Maryland.

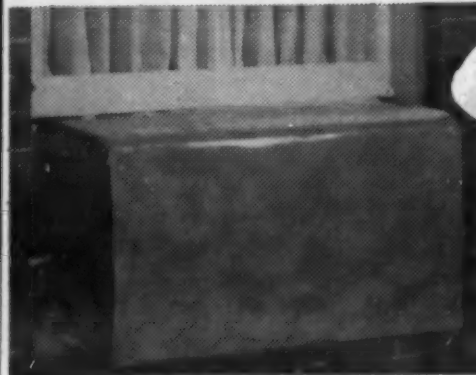
COMMERCIAL CREDIT CORPORATION • A service offered through subsidiaries of Commercial Credit Company, Baltimore... Capital and Surplus over \$190,000,000... offices in principal cities of the United States and Canada.

STAND-OUT

OPPORTUNITY to profit with
ONE PRICED

INTERNATIONAL AIR CONDITIONER COVERS

made of Firestone Velon



32 STYLES
TO FIT EVERY
LEADING
MAKE FROM
 $\frac{1}{2}$ to 2 ton
units 1951
to 1956
MODELS

Wherever an air conditioner stands out, there is an opportunity for you to sell a cover. Profit with the **FIRST, THE FINEST**... **INTERNATIONAL COVERS**... **ALL AT ONE LOW PRICE.** Made of long lasting, heavier gauge Firestone Velon. Write for the facts today!

INTERNATIONAL COVERS FOR AIR CONDITIONERS CORP.
532 Broadway, New York 12, New York

Federal Agencies Report

August Building Booms To Record High; \$28.4 Billion Outlay for First 8 Mos.

WASHINGTON, D. C.—Value of new construction in August rose seasonally to \$4.3 billion, a new high for any month.

In a joint release, the Commerce and Labor Departments said last month's spending for new construction edged up 2% from July and topped August of last year by 1%.

August Outlays Top \$4.2 Billion

Outlays during August a year ago totaled slightly more than \$4.2 billion, the previous high.

Construction outlays amounted to \$28.4 billion for the first eight months of this year, the government said. This was an increase of over 2% over the \$27.8 billion spent last year.

Building Reaches Annual Rate Of \$44.3 Billion

After allowance for seasonal changes, new construction activity in August reached an annual rate of \$44.3 billion, the report noted. During the full year of 1955, construction put in place amounted to \$43 billion.

Most major types of building showed a normal seasonal movement between July and August, the agencies said. However, they noted that activity on military facilities, which usually registers a substantial gain in August, remained steady.

Outlays in August were at a monthly high for these types of construction: office and warehouse buildings, private industrial plants, public utilities, schools, highways, sewer and water works, and public service enterprises.

Private Spending Totals \$2.8 Billion for Month

Private spending for new construction totaled \$2.8 billion in August, the departments said. This was about the same as was spent in July, but 2% under the year-ago total. Most of the decline from the August, 1955, figure came in private spending for new homes, it was disclosed. Last month this type of spending totaled \$1.2 billion compared with \$1.4 billion a year earlier.

During the first eight months of this year, private expenditures for new construction

FTC Takes Appeal Under Advisement On Evis Decision

WASHINGTON, D. C.—The Federal Trade Commission recently heard oral argument on the appeal of counsel supporting the complaint from the initial decision of the hearing examiner on alleged misrepresentation of the Evis water conditioner.

The commission said the matter has been taken under advisement and it will issue a decision "in due course."

The hearing examiner last spring issued an order which would dismiss for lack of proof charges that Evis Mfg. Co. misrepresented operation and advantages of its product.

than \$1.4 billion in August, it was reported. This was 4% above the July total and 8% above August last year. A large part of the increases were for highway construction.

During the first eight months of this year, public construction outlays totaled \$8.5 billion and topped the like period last year 6%. The report stated heavier outlays for highways, public service enterprises, and water and sewer lines more than compensated for a 51% drop in Atomic Energy Commission installations and other public industrial construction.

Du Pont Survey Spotlights at ARW Region 9 Meeting Oct. 5-7

SAN DIEGO, Calif.—A record attendance already indicated, Region 9 of the Air Conditioning and Refrigeration Wholesalers Association will meet Friday, Saturday, and Sunday, Oct. 5, 6, and 7, at Alisal Ranch, Resort which is four miles east of Highway 101 and about 40 miles north of Santa Barbara, Calif.

The program will include discussion periods on general policies of the industry. Presentation of a du Pont survey has been arranged by Samuel N. Seely, western district manager of "Kinetic" Chemicals Div., E. I. du Pont de Nemours & Co., Inc., Palo Alto, Calif.

R. A. Nicol of Allied Refrigeration Suppliers, San Diego, is

chairman of ARW for Region 9 and is in charge of arrangements and the program for this annual fall meeting.

The program will include discussion periods on general policies of the industry. Presentation of a du Pont survey has been arranged by Samuel N. Seely, western district manager of "Kinetic" Chemicals Div., E. I. du Pont de Nemours & Co., Inc., Palo Alto, Calif.

1906

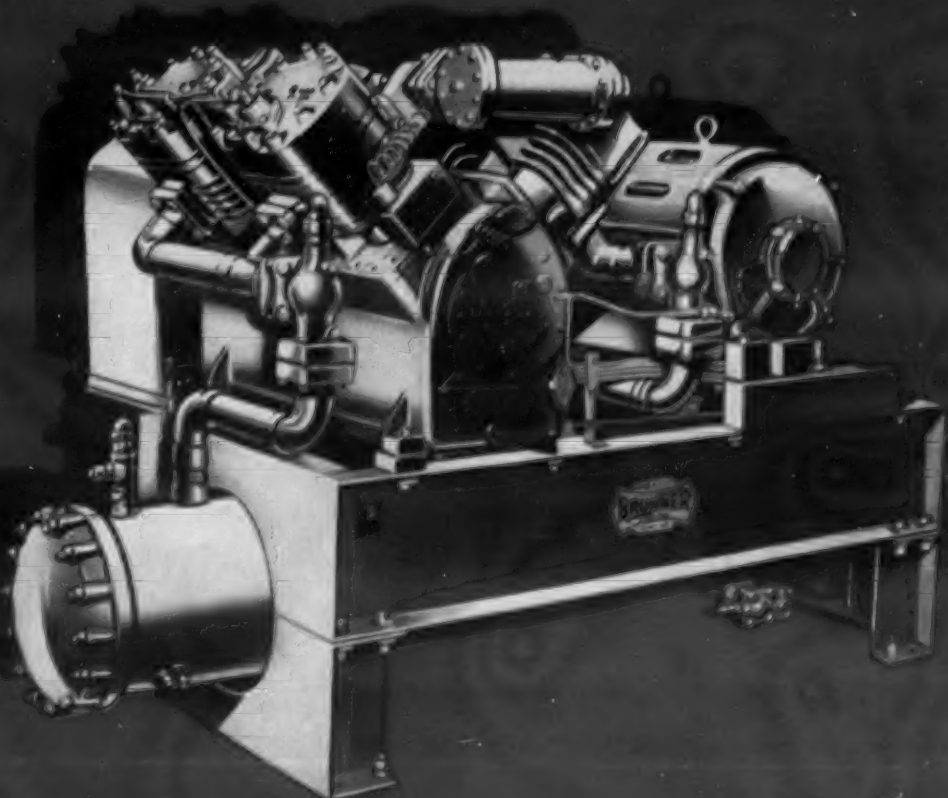


Engineered for mellow melody... the first Brunner-engineered product appeared

TODAY—Brunner engineering serves the industrial refrigeration field with Condensing Units for every requirement.

BRUNNER MANUFACTURING COMPANY, UTICA, N. Y.
THE BRUNNER CO., GAINESVILLE, GA.
IN CANADA: BRUNNER CORP. (CANADA) LTD., TORONTO, ONTARIO

Brunner Open-Type Refrigeration Condensing Units for industrial applications from 10 H.P. through 100 H.P. Also from 1/4 H.P. to 10 H.P. for commercial uses. Brunner-Metec from 1/4 H.P. through 3 H.P.



Trouble-Shooting Air Conditioning Jobs

Analyze 'Chronic Problem' Job, Find and Correct Trouble, Work Out Zone Problems, Check Control Arrangements, Watch Operation

By C. Dale Mericle

MONTGOMERY, Ala. — Basic approach to trouble-shooting a "super-chronic" air conditioning job is first to correct all obvious faults no matter how remote these faults may seem from the trouble, believes Ralph Gonzalez, director of application engineering, Airtemp Div., Chrysler Corp.

Such things as dirty filters, leaking water pumps, etc., may or may not be part of the trouble, but they certainly do not help the over-all efficiency of the system, Gonzalez said at the U. S. Air Force Refrigeration and Air Conditioning Conference held at Maxwell Air Force Base here recently.

Outlines Airtemp's Check-Test and Start-Up Procedures

As part of this presentation on trouble-shooting Henry Herrmann of Airtemp's service training section outlined specific check-test and start-up procedures for Airtemp package conditioners, both commercial and residential. You're going to have to find someone in your organization who temperamentally likes to shoot trouble," Gonzalez cautioned. "You can do an awful lot to people by using your emotions, but none of that works on machinery.

"That cast iron, those bolts and tubing just don't care. They don't react to your feelings, only to what you actually do to them," he said.

"Trouble jobs," Gonzalez continued, "are just like women. There are no two alike. You rarely find the same things causing trouble on different jobs.

Trouble-Shooting Is Finding What Was or Wasn't Done

"All trouble-shooting, fundamentally, is finding out what was done that shouldn't have been done, or vice-versa. It all goes back to the fact that somebody goofed. But if a human being put the trouble in, a human being ought to be able to take it out," he said.

"I'm not talking about normal maintenance and repairs but the chronic, recurring troubles," Gonzalez explained. "For these the design people are logical ones to look for help.

"This takes time, however,"

he cautioned. "First you must localize the problem, then correct it, and then check back to see that it continues to work correctly.

"A super-chronic job usually has several acts of commission and omission which contribute to the trouble. Fundamentally, there are two kinds of super-chronic jobs:

"First, the job that never did work right. To me this job is still in the installation stage.

Unravel Problem So Serviceman Can Work

"Second, the job that produces satisfactory results for

one or more seasons and then becomes super-chronic. Evidently this type has no serious design faults or acts of commission or omission. The problem here," he said, "is to unravel it so the serviceman can service it. Often the original drawings are lost.

"On jobs that never have worked right, I believe it's best to make load calculations of the way the job works now," he advised.

"Also," he suggested "forget worrying about who's going to pay for what. Concentrate all your efforts on finding and correcting the trouble first. Then

work out the zone problems, and then check the control arrangements.

"Keep in mind that you're seeking information. It is of no significance who designed the system or why he designed it that way. The job is there. It exists. You've got to work from here," he emphasized. "Furthermore, don't worry about the original specifications. Remember, the equipment can't read. It doesn't know what it's supposed to be and do.

Talks To Servicemen, Users

"Before I talk to the user I'll have four or five different versions from men who've tried to fix the job. But users can often give you helpful suggestions," Gonzalez said. "They can show you patterns of the trouble, such as mild weather complaints; that is, the trouble occurs only during periods of mild weather. "It is necessary to watch the

job for several hours, and also through a complete start-up cycle," he declared.

Generally, little trouble is found with the coil and the condenser, but the compressor "does all the work, so if something's wrong, the compressor may break down.

"Many compressors are replaced without finding and correcting the system defect which caused the compressor to fail," Gonzalez said. "Sure, compressors sometimes have faults of their own, but I'd guess that two-thirds of compressor break-ups are due to faults in the system.

Replace Compressor and Check System's Operation

"You can learn an awful lot by checking the operation of the system after the compressor has been replaced," he noted.

"In his part of the discussion (Concluded on next page)

Look for these labels soon!



FOR DEHYDRATING AND TESTING...

BEACH-RUSS Portable VACUUM PUMPS



Model O Single-Stage Pump—1 mm. vacuum, blank flange, 1 CFM, 1/4 HP, weight 48 lbs.

Model A Two-Stage Pump—1/10 mm. vacuum, blank flange, 2.3 CFM, 1/2 HP, weight 80 lbs.

Write for prices and data.

BEACH-RUSS COMPANY

82 CHURCH ST. • NEW YORK 7, N. Y.

Trouble-Shooting Jobs--

(Concluded from preceding page) of trouble-shooting, Henry Herrmann recalled that "one of the best suggestions on servicing in general I've ever seen was put by a sewing machine manufacturer. These instructions started out: 'First, put that screwdriver back in your pocket. Second, read the instructions.'

"The serviceman," Herrmann declared, "is really a 'doctor of mechanical equipment.' Like the medical doctor, he must know anatomy and physiology, that is, he must have knowledge of the product. He, like the doctor, must know hygiene and health, that is, preventive maintenance. And then on service calls he must make a diagnosis and then provide the remedies or repairs to the unit."

Reviewing the Chrysler Air-temp check-test and start-up

procedure, Herrmann pointed out that the printed form covering this on packaged air conditioners requires notations of model and serial numbers, nameplate data, control panel data, type of condensing, make and type of expansion valve, etc.

Such permanent installation records are extremely helpful for future reference, he explained.

20 Major Points To Check-Test, Start-Up

There are 20 major points to this check-test and start-up.

"We say, first make sure the shipping bolts have been removed. Then inspect all wiring connections to make certain there are no loose connections. It is possible," he said, "for terminal screws to loosen in transportation. Pull the main switch

to the unit and check every connection.

"Next, check the tension and alignment of the blower belt, which should be just tight enough to prevent the belt from slipping on start-up. The blower bearings and motor bearings should then be checked for lubrication. Many models have permanently lubricated bearings, but all should be checked," Herrmann advised.

"Likewise, if a cooling tower is used, the bearings on the tower fan motor and pump motor should be lubricated according to the instructions.

"Now install pressure gauges where required, and these gauges," he reminded the group, "must be accurate.

"After opening the discharge and liquid line shut-off valves all the way, the unit can be started. All the controls, including the high and low pressure switches, are checked now for

correct setting and operation.

"Let the unit run for an hour. In the meantime," Herrmann explained, "you can check for other things. Is the refrigerant charge okay? Is the supply of condenser water adequate? Check piping sizes. Is all water piping free of leaks? Is the water drain adequate, and does the condensate piping run separately to an open drain?"

"After the unit has operated at least an hour, several temperature checks must be made, using good, accurate instruments," he said. "These include entering and leaving air, dry-bulb and wet-bulb temperature, suction line temperature, superheat, head, suction, and oil pressure, entering and leaving temperatures of condenser, oil level, voltage and amperes of compressor, fuse size, horsepower and amperes of cooling tower pump motor or condenser motor.

"The entire unit, of course,

must be tested to be sure it's free of refrigerant leaks, and if a water regulating valve is used, it must be checked to see that it closes shortly after the unit stops," Herrmann said.

"Make sure the unit is clean inside and out, and that the discharge air grilles are properly adjusted. Final steps include filling out the warranty card, giving the owner or operator instructions on filter attention, control operation, etc., and trying to sell the owner a maintenance contract."



F. HALLORAN



H. COSTELLO, JR.



H. SWATMAN



W. MARSHALL

Penn Controls Adds 4 Sales Engineers

GOSHEN, Ind. — Four new sales engineers have been added to the sales organization of Penn Controls, Inc.

They are Francis Halloran, Howard Costello, Jr., William Marshall, and Harold Swatman. The men have been assigned to various branch offices following a two-month training program at the Goshen plant.

Swatman will serve as a sales engineer for the southern part of Texas with his office located at 154 E. Sunnyside, Houston 22, Texas.

Halloran, Costello, and Marshall will specialize in trade service contact work on the east coast, with Halloran working out of Penn's Boston office, Costello from the North Bergen, N. J. district office, and Marshall in Philadelphia.

...on Pennsalt's new refrigerants

ISOTRON

THE KEY TO MODERN LIVING

Now—even before the complete line of ISOTRON* fluorinated refrigerants is ready—Pennsalt offers the much-needed "missing link" of individualized service and assistance to the air-conditioning and refrigeration design engineer, the wholesaler, and the service contractor.

A pioneer and leader in modern fluorine chemistry, Pennsalt stands squarely behind the new ISOTRON line. ISOTRON products are COMPLETELY INTERCHANGEABLE with other reputable fluorinated refrigerants. They're of precisely the same formulas as the other products of this kind, and will be manufactured in a modern new plant with the rigid quality control

you expect of Pennsalt. ISOTRON refrigerants will be packed at the plant in all standard containers.

INVESTIGATE THE ISOTRON LINE! Benefit from Pennsalt's advanced thinking and welcome service, which will be available nationwide to refrigeration service contractors and wholesalers as well as to original-equipment manufacturers. For further information on ISOTRON refrigerants, write Isotron Chemicals Dept. 363, Industrial Division, Pennsylvania Salt Manufacturing Company, Three Penn Center Plaza, Philadelphia 2, Pa.

*ISOTRON IS A TRADEMARK OF THE PENNSYLVANIA SALT MFG. COMPANY



For more information about products advertised on this page use Information Center, page 21.



The NEW DOUBLE STRAP
AIR CONDITIONER

PROTECTOR

The only REAL fit for ALL model window air conditioners. • Only SIX sizes and stock numbers. • Attractive forest green fabric. • Clear plastic packaging with visible instruction sheet. • Inexpensive. • A fast and easy seller.

Contact

TULSA CANVAS
PRODUCTS CO., INC.

P. O. BOX 2072

Tulsa, Oklahoma

Inside Dope

By GEORGE
F. TAUBENECK

(Concluded from Page 1, Col. 1)
scouted for third. Incoming throw from the outfield hit him on the shoulder and bounced into a dugout. Reedy trotted home.

More Baseball Stories

Hauled into court for altercation with a fan was Duke Snider of the Dodgers.

"I'm sure Snider didn't hit him," cracked Dale Long. "The fan was lefthanded, and Snider can't hit southpaws."

Radio-interviewed, Dusty Rhodes of the Giants allowed as how Ty Cobb might hit no better than .200 against current National League pitching.

"How can you say that?" 000 bags of peanuts, 26,000 ice spluttered the radiator. "Cobb had a lifetime average of .367, 18,000 scorecards, and 7,500 in both leagues, and over a 23-year period."

"Yeah, but he must be goin' on 70 years old now."

Time and place: Briggs Stadium, July 29, 1956.

Opponents: Washington and Detroit.

Pitcher Dean Stone of the Senators hadn't allowed a run until two out in the last of the ninth. Furthermore, he had two strikes on Bob Kennedy of the Tigers. Boom! Home run.

Poor Dean. He was just a Stone's throw from Washington's first shutout of the year.

Newspaper Boners

Happy fans ate 41,000 hot dogs at a recent doubleheader drawing 32,346 fans. Also, 27,-

Roy Sievers hit his fifth homer for the Senators with nine aboard in the fourth inning.—*Providence (R. I.) Journal*.

The St. Louis Cardinals and the Philadelphia Phillies split a two-night doubleheader tonight, the Cards taking the first, 3-2, on Rookie Wally Moon's seventh inning two-run homer by Stan Lopata in the eighth.—(A-P dispatch).

Here's Where He Came In

Survivor of the "Daffiness Days" era, Burleigh Grimes, watched a 1956 Brooklyn exhibition at Vero Beach.

On a hit-and-run play rookie

Mike Napoli became confused and slid back into first base just as Gil Hodges arrived safely on a Texas Leaguer single.

"That's all," Grimes arose to leave. "These new Dodgers are using our old plays."

Oddities of the Year

In succession the Cincinnati Redlegs profited by a double, two walks, a passed ball, and a wild pitch—yet failed to score.

Happened in a 1956 exhibition with Stengel's Yankees this-away:

Temple doubled to open the inning. Attempting to stretch for a triple, he was caught at third. Burgess and Bell walked. On a passed ball Burgess was erased at third, too. Bell reached second base on the wild pitch; but Post whiffed for the third out.

Slimy subterfuge! Felonies and misdemeanors! Call the cops!

Opening games of the 1956 minor leagues scramble put a spotlight on four-eyed Ken Guettler of Shreveport, who slammed four home runs and a double against Houston pitchers in three days.

Fourth day in Houston the Shreveport hotshot was blind for all practical purposes. Some dirty local dog had stolen his extra-powerful eyeglasses from his locker. So he couldn't play.

This foul feat compares with the poisoning of a Seeing-Eye Dog!

Enter Our Industry

Baseball always has had great fascination for most American boys, of course. Recent activities by air conditioning, appliance, and TV manufacturers ought to make the kids more eager than ever to get into the baseball business.

As reported previously in the NEWS, Frigidaire air conditioning systems were installed this year at Crosley Field, home of the Cincinnati Redlegs, to serve the dugouts, the press box, broadcasting booth, press room, and TV monitor room. The effect has been salutary on the Redlegs.

Then, as NEWS readers also know, Norge is offering a home freezer to the major league team manager ejected by umpires from the most games this season.

Now comes news from Motorola telling us Eddie Taylor presented a 21-in. TV set to the Chicago White Sox at a Sox-Yankee game.

In addition to the TV set for the clubhouse, Motorola also offered a portable radio to the winning pitcher in the game, the outstanding player, and every player who hit a home run.

Pitchers Dick Donovan and Sandy Consuegra both were given radios, Consuegra was credited with the win). Sammy Esposito, as the outstanding player, and Larry Doby for his fifth-inning homer also received sets.

In view of these developments, we'll wager the kids are aiming for a career in baseball with more determination than ever.

Original Lou

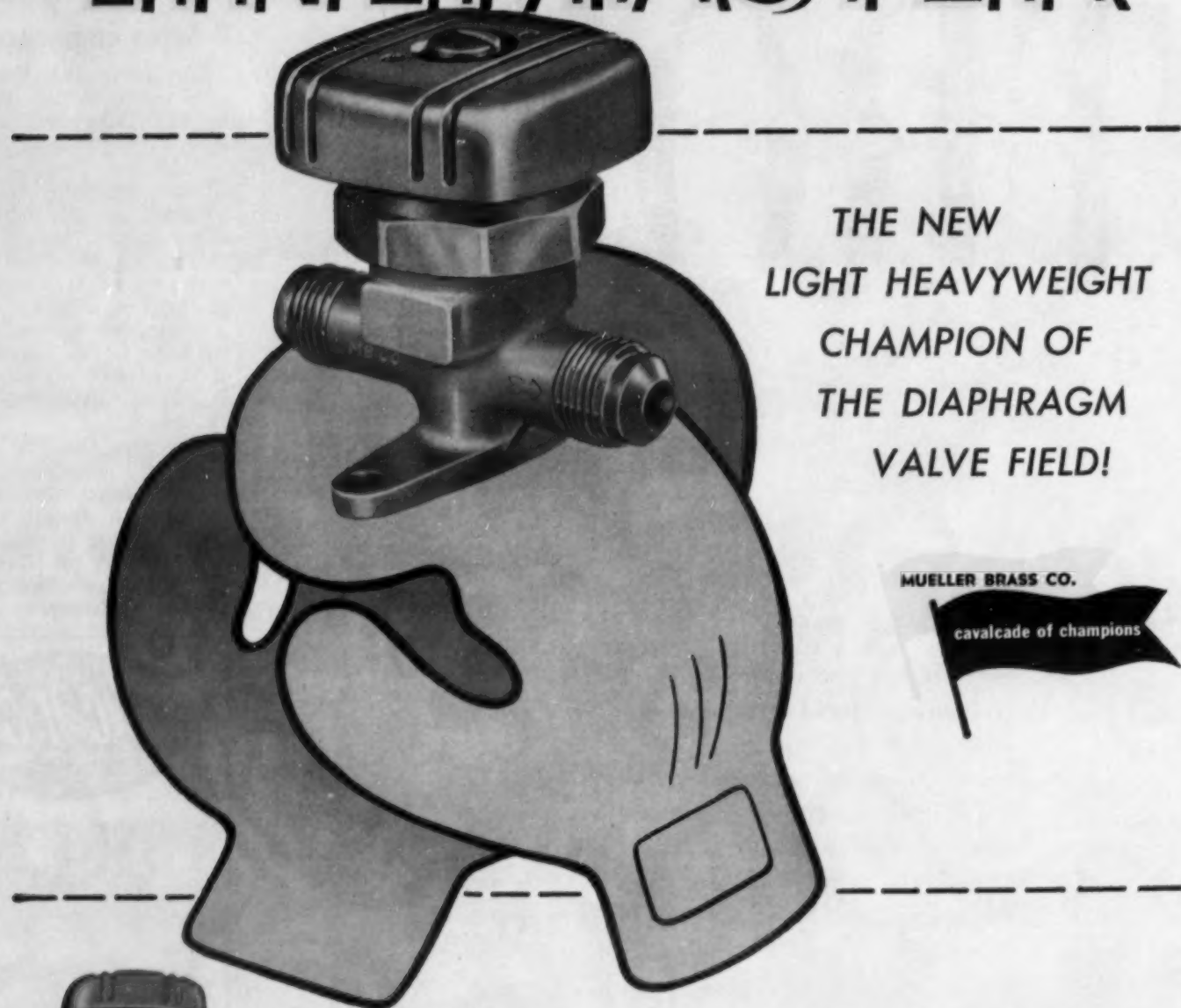
Manager Lou Boudreau, who invented the widely-copied "Williams shift," and later came up with an effective "Mantle shift," was queried:

"Got any ideas about stopping Berra?"

"Why, yes. I tell my fielders to fan out in every direction."

INTRODUCING THE MUELLER BRASS CO.

LINEMASTER



THE NEW
LIGHT HEAVYWEIGHT
CHAMPION OF
THE DIAPHRAGM
VALVE FIELD!

MUELLER BRASS CO.

cavalcade of champions



SUPER-SEALING

A phosphor bronze diaphragm between two stainless steel diaphragms gives the LINEMASTER an unbeatable combination for super-sealing and long life. Diaphragms pressure wear tested for thousands of openings and closings without failure.

SUPER-SEATING

In the LINEMASTER, tough, resilient molded nylon seat disc insures positive shutoff even if foreign material is lodged against the seating surface. Mueller Brass Co. pioneered and proved the superiority of nylon for "super-seating".

The simple design and sound engineering of this compact forged brass LINEMASTER make it a real heavyweight among "shorty" diaphragm valves. These new LINEMASTERS are solid brass construction throughout . . . even to the comfortable, square design handwheel. Flow passageway is streamlined to eliminate turbulence and provide full-flow. Exclusive triple diaphragms of phosphor bronze and stainless steel furnish seep proof sealing and excellent wear resistant properties. A tough, resilient nylon stem disc operating against a precision finished seat assures positive shutoff. Five straight-thru and angle type LINEMASTERS with flare, solder, and M.P.T. end connections are available. Never before has such a compact valve embodied so many good sound engineering features and been built to such high standards of quality. The LINEMASTER is really a light, heavyweight champion. See the popularly priced LINEMASTERS at your wholesaler's . . . and judge for yourself.

MUELLER
BRASS
CO.
STREAMLINE
PRODUCTS

MUELLER BRASS CO. PORT HURON 9, MICHIGAN

You can take a 350 lb. appliance UP STAIRS—ALONE! WITH **HYKER** WHY PAY TWO MEN? SAVE \$10 A DAY

WALKS UPSTAIRS YOU DON'T DRAG IT!

write "HYKER" 910 W. Lycoming • Phila. 40, Pa.

Servel's Third Quarter Fiscal Operations Up Almost \$1,000,000 over 1955 Period

EVANSVILLE, Ind.—An improvement of nearly \$1 million is reflected in the operations of Servel, Inc. for the current fiscal year's third quarter, ended July 31, as compared with last year's corresponding quarter, according to a report by Louis Ruthenburg, board chairman, and Duncan C. Menzies, president.

Total net sales for May, June, and July were \$13,607,713, a reduction of \$7,461,675 under sales of \$21,069,388 for the similar period of 1955.

The net loss for this year's third quarter was \$211,496, a decrease of \$914,865 from last year's figure of \$1,126,361.

For the first nine months of the fiscal year Ruthenburg and Menzies reported total net sales of \$36,894,004, as compared with

\$45,334,785 for the first nine months of 1955.

Servel's net loss at the end of the nine-month period this year was \$1,314,575, or \$1,726,122 less than the loss of \$3,040,697 for last year's nine months.

A shrinkage of \$3.5 million in sales of civilian products for the first nine months of 1956 was attributed to a general sales decline throughout the refrigerator industry and to the elimination of unprofitable products which had been in the Servel line in previous years.

A decline of \$5 million in defense sales for the nine-month period was due primarily to the completion of contracts. The company has a backlog of \$1.9 million in unfilled defense orders.

In a letter to shareholders,

Menzies explained that Servel, for many months, has been engaged in a program of contraction aimed at reducing its plant facilities and work force to a size consistent with logical requirements and concentrating on those products which have traditionally contributed most to company profits.

He added that surplus buildings and equipment are to be disposed of. Negotiations are in progress for the sale to other companies of facilities no longer needed for operation of Servel's business.

"The net effect of this program of contraction will be to reduce overhead and thus help the company to become a lower-cost producer," he said. "It will also increase working capital and create cash for the acquisition of profitable businesses and thus take advantage of Servel's large carry-forward tax credit," Menzies added.

Sees 10% More Dealers, 41% More Big Appliance Sales Daily by '60

MILWAUKEE — By 1960 more than 74,000 major home appliances will be sold every 24 hours, an increase of 41% over the 52,300 now sold daily.

The number of appliance dealers will increase by 10% within four years, Harold Bull, vice president in charge of distribution for Norge Div., Borg-Warner Corp., told a regional National Appliance & Radio-TV Dealers Association meeting.

Bull also scored the statement recently by a large manufacturer that the appliance dealer of the not-too-distant future would be like the automotive dealer today. He told his NARDA audience that the expression "automotive dealer" should be a frightening phrase since it would make every dealer

a "captive of the factory."

He based his predictions on increases in the availability of people, dollars, new shopping areas, and the "human element present in the sale of every home appliance."

Sale of the automatic clothes dryer will soar 194% to nearly triple nationally by 1960. More than 10,500 will be sold then, compared with 3,600 now.

Washer sales will jump from 13,300 to 18,500 (a 39% gain). Freezer sales will jump from 2,800 every day to 4,900 (a 75% gain) and ranges from 11,000 to 14,000 (a 27% gain).

"Even a refrigerator, now used in practically every home, will be sold 14,600 times every day, compared with 11,200 now for a 30% gain," he stated.

CUT TUBING COSTS

...without introducing brazing and joining problems.



*Let your Bohn representative
show you how to save 5c to 29c per foot
by switching from copper
to aluminum refrigeration tubing.*

Bohn aluminum
tubing is available
complete with
copper brazing spuds.
Call your Bohn
representative today.

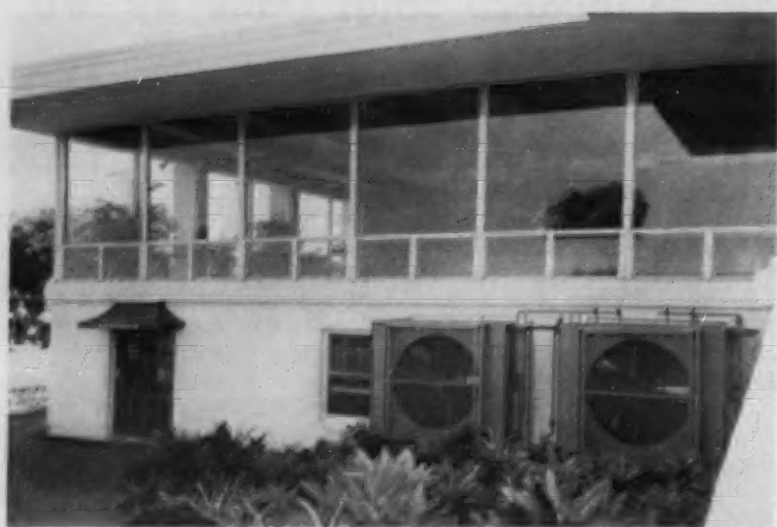
BOHN

ALUMINUM AND BRASS CORPORATION
1400 LAFAYETTE BUILDING • DETROIT 26, MICHIGAN

Sales Offices: BOSTON • CHICAGO • CLEVELAND • DAYTON • DETROIT • INDIANAPOLIS
MILWAUKEE • MINNEAPOLIS • MOLINE • NEW YORK • PHILADELPHIA • ROCHESTER • ST. LOUIS

For more information about products advertised on this page use Information Center, page 21.

30-Ton Air-Cooled Packaged Unit Air Conditions Club Dining Room



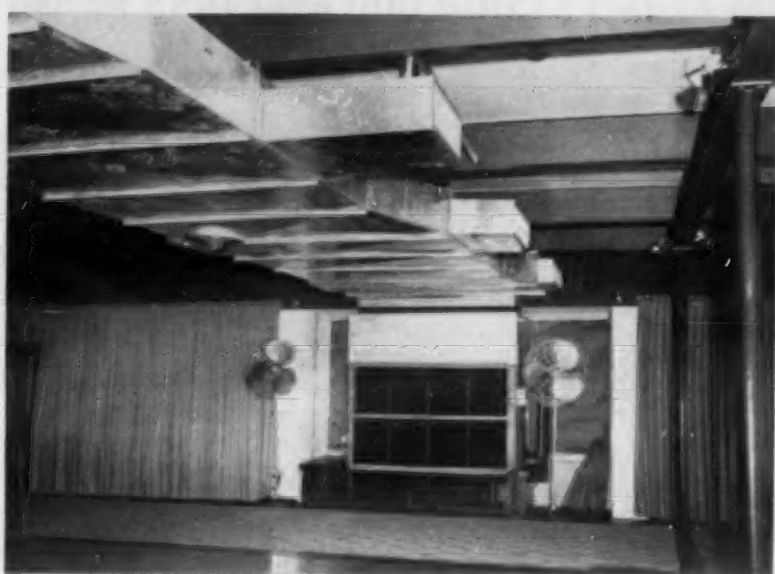
PATIO ROOM AT MIAMI SHORES country club is cooled by 30-ton air-cooled system. Unicons shown here are connected with Typhoon packaged unit at one end of dining room. Though seen prominently here, they are actually hidden from diners' view by building and from fairways by shrubbery in foreground.

Split Compressor, Evaporator System Powers Huge Unit

MIAMI SHORES, Fla.—The "Patio" dining room of the municipally-owned Miami Shores Country Club is air conditioned by a 30-ton air-cooled packaged air conditioner, one of the largest air-cooled packaged jobs to be installed in this area.

Large Unit Conditions 65 by 55-Ft. Room

The 55 by 65-ft. dining room occupies the northwest corner of the club building. It's north and west exposures are solid glass, giving an excellent view of the rolling fairways. It has a



VIEW SHOWING EVAPORATOR unit and duct system in the dining room. This was later hidden from view by fancy grille and false ceiling.

Most powerful help a dealer can give himself to increase sales and income in air conditioning



Correspondence Sales Training Course in Commercial and Industrial Air Conditioning

Here's something unique in the way of opportunity for dealers and their salesmen:

A Success Course in a timely field—Packaged Air Conditioning. Your teacher? General Electric—the name that signifies both Success and Packaged Air Conditioning. You'll get new dimensions in sales training based on General Electric's field-tested methods—and that means new dimensions in income for you.

In giving this course, General Electric believes:—IF A MAN CAN SELL he can be taught air conditioning—IF A MAN KNOWS AIR CONDITIONING he can be taught selling—IF HE KNOWS NEITHER he can be taught both—IF HE KNOWS BOTH you can make him tops in the field.

Whether you currently handle General Electric products or not, you are eligible to apply for enrollment in the course. We think this course will prove a tonic in success for you. Only \$7.50 for 8 lessons—less than a dollar a lesson.

8 POWER-PACKED LESSONS IN THIS GENERAL ELECTRIC COURSE

1. Sales opportunities and customer benefits.
2. The General Electric Packaged Air Conditioner.
3. How to make an application survey.
4. How to make a cooling-load estimate.
5. How to find prospects and prepare proposals for them.
6. The Sales Presentation.
7. Shortcuts in selling air conditioning.
8. How to apply G-E Packaged Air Conditioners.

PLUS: A copy of General Electric's dynamic visual selling aid—"The Machine That Makes Money".

YOU WILL RECEIVE UPON COMPLETION OF COURSE:

1. A handsome parchment certificate suitable for framing.
2. Handy 8-ft. steel tape measure complete with attractive leather case.
3. An opportunity for a profitable career selling packaged air conditioning to stores, offices, factories and institutions.

Get application for enrollment now from your local G-E Packaged Air Conditioning distributor or mail coupon below

Retail Sales Development
General Electric Company
Commercial & Industrial Air Conditioning Dept.
5 Lawrence Street, Bloomfield, N. J.

Please send me, without obligation, your application for enrollment for General Electric's Packaged Air-Conditioner Correspondence Sales Training Course.

Name _____

Address _____

City _____

I am ☐ am not ☐ an authorized G-E Packaged Air Conditioner dealer.

seating capacity of 300.

The job was installed by Dudley Cawthon, Inc., Typhoon dealer in the Miami area. Cawthon recalled that he bid for the job on the basis of a water-cooled system and won the bid.

Then difficulties arose when the well produced corrosive water and caved in. So Cawthon sold the city commissioners on installing an air-cooled system.

The system consists of a 30-ton Typhoon packaged unit connected with two BD-2000 Kramer Trenton "Unicons." The Unicons are located just outside and below the dining room.

Compressor Set In Room Below Evaporator

The Typhoon package is split with the compressor section mounted in the locker room. Directly above the compressor section and at one end of the dining room is installed the evaporator section. It is hidden from view by a fancy grille.

Cooled air is distributed through a ceiling level duct that runs the length of the room. Outlets are taken off at intervals along the main duct. Ducts are hidden above a false ceiling. Air is returned through a grille below the evaporator.

Stephen Tong, club manager, said that the system worked well in its first tests.

Wybro To Develop Mid-East Worthington Distributors

HARRISON, N. J.—John C. Wybro left recently for Beirut, Lebanon, where he will cover a new assignment as special representative for Worthington Corp.'s export air conditioning and refrigeration activities in the Middle East.

His duties will include the developing of new distributor organizations as well as training existing distributors.

AMINCO

Oil Separators, Suction Throttling Valves, and Flow Control Valves, Mufflers, Etc.

Write for full information
Our 70th Year

AMINCO REFRIGERATION PRODUCTS CO.

1000 E. McNICHOLS RD.
DETROIT 3, MICH.

Seen as Boon To Equipment Sales

St. Louis Ammonia Piping System To End Service as Contracts Expire

ST. LOUIS—A large number of downtown hotels, theaters, stores, office buildings, restaurants, and other establishments will have to install additional refrigerating equipment before long.

This was revealed with the announcement that Merchants Refrigerating Co., which supplies piped ammonia for air conditioning and refrigeration, is terminating this service when present contracts expire. Most of the contracts end this fall. The last one ends in June, 1957.

According to W. R. Hanebrink, manager of the company, the service is being discontinued because of the construction of the Third Street Interregional Highway extension. He said the cost of relocating the ammonia pipe lines would not make continued operation of the service feasible.

SYSTEM 50 YEARS OLD

Hanebrink pointed out that the underground refrigeration service has been in operation here for more than 50 years, originally sending refrigerant to beer boxes and wine cellars.

The pipe lines were operated for many years by St. Louis Refrigerator & Cold Storage Co. This firm's assets were acquired by Merchants Refrigerating Co., a New York concern, in 1948.

The refrigerant furnished by the firm is used for air conditioning and also for ice water and food refrigerators in hotels and restaurants. A large part of the business had been with produce dealers in the old Third St. commission row, now closed.

CITY MORGUE SERVED

Merchants Refrigerating also supplies refrigerant to the City Morgue and the city-operated Union Market at Sixth and Lucas Aves. The service to the morgue is for the storage of bodies.

Conway B. Briscoe, director of public utilities, said a study is being made for the installation of refrigeration at the morgue and the market.

He said the city will seek to extend its contracts with Merchants for a period long enough to permit the city to install its own facilities. This will take about six months, he stated. The contract at the market runs until the end of October and the one at the morgue until the end of December.

An official of one restaurant concern, Miss Hulling's Cafeterias, reported that as a result of Merchant's action, the firm will have to purchase air conditioning units for both stores and four walk-in and one reach-in

Borden Building New Refrigerated Biscuit Plant

ATLANTA—The Borden Co. has begun construction of a new refrigerated biscuit plant in the Empire industrial district of East Point.

Officials said the plant will initially have 63,000 sq. ft., and will be a combination biscuit plant and cheese warehouse. The plans also allow for future expansion to produce fruit salad and other gelatin products.

Dairy Specialist Estimates

Over 25,000 Refrigerated Bulk Milk Storage Tanks on U.S. Dairy Farms

COLUMBUS, Ohio — There are more than 25,000 refrigerated bulk milk storage tanks on dairy farms in the United States, an Ohio State university dairy specialist estimated recently.

The dairy specialist, E. F. Baumer, declared that as of Dec. 1, 1955, there were 850 such tanks on Ohio farms. This is the latest figure available, he said, and represents about 3% of the 27,000 milk producers in Ohio.

He reported that there were about 3,000 bulk milk tanks in California alone.

keep
milk
cowfresh

IN YOUR COOLER...

FOR
ACCURATE TEMPERATURE
CONTROL... INSTALL

**Alco
valves**

CONTROLS FOR
EVERY COOLER
APPLICATION

SEE YOUR ALCO WHOLESALE

Write for
Catalog # 20



Designers and Manufacturers of
Thermostatic
Expansion Valves; Evaporator
Pressure Regulators;
Solenoid Valves; Float
Valves; Float Switches.

ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.

6786

U.L. & A.S.M.E. WATER-COOLED CONDENSERS and **LIQUID RECEIVERS** for **EVERY REQUIREMENT**

STANDARD REFRIGERATION CO.
332 S. Hoyne, Dept. C
Chicago 12, Ill.

Write for our **NEW** Catalog

16-Ft. Trailer Helps Sell Display, Wall Type Refrigerators Franks Chilled Down to 45° In 20 Mins. To Solve Packaging Problem

MARSHALL, Mich.—Fred G. Eaton, national accounts manager for Sherer-Gillett Co., is a firm believer in making it easy for interested prospects to see the latest model in the company's line of display refrigerators.

That is the reason Eaton today is travelling with a 16-ft. trailer hitched to his Oldsmobile.

The new model is the 4305MB, a 5-ft., island-type, self-contained display refrigerator for frozen foods. It matches in appearance the regular Sherer island cases for remote installation.

While it can serve as a complete frozen food display case in a smaller store, it is designed primarily for the display of specials in the frozen food line—dinners, pies, etc.—or for the mass display of an item on



TRAVELLING with a 16-ft. trailer containing display items, Fred G. Eaton, national accounts manager of Sherer-Gillett Co., makes it easy for interested prospects to view the firm's latest models.

which a special price may be offered.

Since it is self-contained, it is only necessary to connect it to the electric power line and it may be moved from spot to spot in the food market as the need is indicated.

The trailer is also equipped with a slide-door, wall-type re-

frigerator plus a specially built literature rack. The walls have color prints of actual installations of Sherer equipment.

Eaton has found that the ability to show a new model as a physical reality is much better than trying to describe it, even with the support of a colorful catalog page.

SEATTLE—Construction of a "chill tunnel" which refrigerates newly-processed frankfurters down to 45° F. in 20 minutes has solved a packaging problem for Milwaukee Sausage Co. of Seattle.

Having recently remodeled and expanded its plant, the company has tremendously built up sausage production to keep pace with the rapid population growth which Seattle and neighboring communities have experienced in recent years.

In cracking the supermarket field, Milwaukee Sausage has switched from bulk frankfurters to the prepackaged variety.

Among the plant changes made was the addition of a new 45 by 120-ft. sausage kitchen which provides adequate space

to hang frankfurters as they are produced to roll directly by overhead rail into the smoke house.

Thirty-five by 100 ft. of space is now occupied by the freezer and chill room which Milwaukee Sausage found necessary in order to produce frankfurters which can be successfully packaged in acetate wraps by automatic packaging machinery only a few minutes following the stuffing of the product.

First Planned To Package Franks upon Completion

Originally, it was planned to begin packaging operations as soon as the frankfurters were completed. However, because of high temperatures, it was found that the wieners were likely to discolor when wrapped in a non-porous acetate package.

Even when this situation was remedied by the switch to "breather" types of packaging, the acetate was likely to pull tight, wrinkle, and otherwise lose eye-appeal.

Eventually the difficulty was traced to the temperature of the product, which normally is up around the 100° F. mark as processing is completed.

At first, it seemed that the only solution was to hang the sausage overnight in chill rooms already provided in the plant.

But, inasmuch as sausage demand is extremely heavy and space at a premium in chill rooms, it was eventually determined that a more practical solution would be the providing of a chill tunnel which would permit swift temperature reduction and also allow packaging operations to begin quickly.

W. E. Stone, veteran Seattle refrigeration contractor, studied the problem before the new 45 by 120-ft. brick and tile wing was constructed.

Designs Chill Tunnel 4 by 8 by 25 Ft.

After much experimentation, he designed the chill tunnel, with dimensions of 4 by 8 by 25 ft., which is located midway between the weiner production and the packaging areas.

The tunnel is capable of chilling franks, moved by overhead rail into the area, down to 45° F. in approximately 20 minutes. A 5½ by 5½ two-cylinder vertical single-acting Vilter compressor provides refrigeration for cold plates in the ceiling.

Through refrigerating swiftly by this method, it has been found, the frankfurters not only give up heat which would adversely affect the acetate package, but also develop a high gloss which makes them far more eye-appealing.

The refrigerated frankfurters, naturally, are easier to handle, with less jamming and difficulties along the packaging line.

Now, with the chill tunnel in operation, Milwaukee Sausage Co. can handle any type of order rapidly and efficiently, even "emergencies" where huge quantities of franks are ordered for picnics, rallies, and so on.

The chill tunnel has worked out so effectively that it is planned to use it for quick cooling of other meat products.

DEPENDABILITY

and

LESS SERVICE

That's Why

More and More

Wholesalers Are

Successfully

Standardizing On

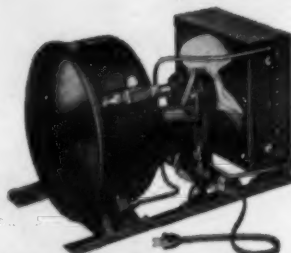
KELVINATOR

Every day wholesalers are proving that the dependability of Kelvinator equipment assures them complete customer satisfaction.

More and more responsible, aggressive wholesalers have found that the sound policies and selling practices in Kelvinator's new comprehensive wholesaler program assure them more sales

and more profits, more customer satisfaction.

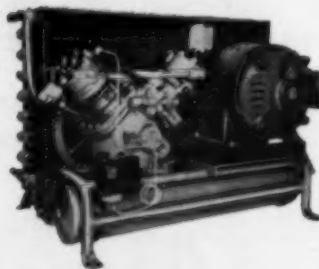
It will be well worth your while to study the advantages of this new Kelvinator wholesaling plan. Write today and get complete information on our many real advantages . . . our proved wholesaler program . . . our dependable products from a reliable source of supply.



HERMETIC CONDENSING UNITS



COMPRESSORS



OPEN-TYPE CONDENSING UNIT

Kelvinator

Division of American Motors Corp., Detroit 32, Mich.—In Canada: Kelvinator of Canada, Ltd., Toronto 15, Ontario

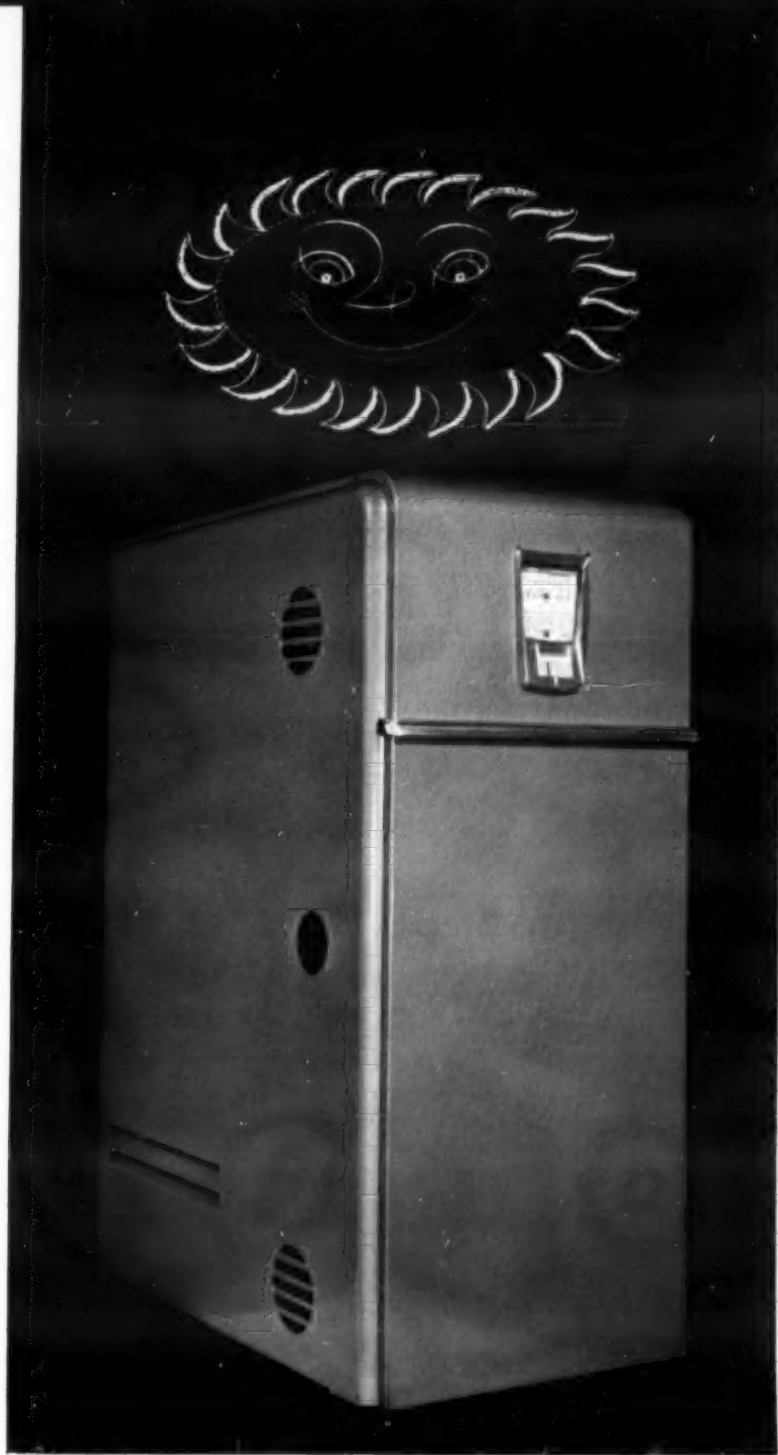
American Motors Means



More for Americans

SPECIALISTS IN REFRIGERATION SINCE 1914

For more information about products advertised on this page use Information Center, page 21.



Model 26—Boiler

GROW BIGGER WITH



and here's one way you can
GROW BIGGER WITH

bryant



REAP THE PROFITS FROM
BRYANT'S FIELD-TESTED
and proven

MONEY BACK GUARANTEE PLAN

that increases furnace sales

This is a proven furnace sales-building promotion that will double and treble your heating sales in the off season. It is open only to qualified Bryant dealers. Learn how you can qualify to participate in this proven sales-building promotion.

and here are 8 more reasons why
you'll GROW BIGGER with BRYANT

1. Your customers know and trust the name Bryant . . . famous for 47 years as the leading name in home comfort.
2. From small home to mansion there's a Bryant to fit the budget and the need in gas or oil furnaces, boilers, air conditioners, space heaters, unit heaters, water heaters.
3. You build customer confidence when you install Bryant . . . the highest quality home comfort equipment built.
4. You profit more with Bryant because of the Bryant dealer development program, the most complete in the industry.
5. You get sales-building tools that increase sales and profits.
6. You have the help of a nearby Bryant distributor who gives you complete engineering, sales and service help.
7. You are backed by powerful national advertising.
8. You get complete co-op advertising to build sales in your own community.

Every home owner who is thinking about new heating equipment for his home will want to know the details of Bryant's exclusive *Money Back Guarantee*. That's why it has been a sure-fire prospect getter wherever it has been used. Get the details today. Learn how simple and straight-forward it is. For the name of your nearby Bryant distributor, write, Bryant, 48 Monument Circle, Indianapolis 4, Indiana.

The finest,
fairest satisfaction
guarantee offer
ever made

A sale plan
that offers
guaranteed furnace
performance!

A straight forward
no-strings-attached
offer that
makes sales

If your customer
isn't satisfied he
gets back full
furnace cost!



Be Mr. B.
in your
community!



grow bigger with

bryant



Problems Similar To Civilian Installations

How 18 Officers' Quarters Were Conditioned With Least Disruption of House, Home Life

OMAHA, Neb. — Design, installation, and salesmanship problems involved in the recent air conditioning of 18 officers' quarters for headquarters of U. S. Air Force Strategic Air Command at Offutt Air Force Base here were similar enough to those encountered in civilian life to merit review by the residential contractor.

How these problems were solved was revealed by Russell W. Upham, chief of the air conditioning and refrigeration section, Hq. SAC, at the recent Air Force Refrigeration and Air Conditioning Conference held at Maxwell Air Force Base, Montgomery, Ala.

Occupants Had To Be Sold on Waiting for Central System

A major problem, Upham indicated, was to convince ranking generals and their families that it was worth waiting a year for a more expensive central residential system instead of installing window air conditioners immediately upon being authorized back in May of 1955.

Enthusiastic satisfaction of the families involved with the systems as finally installed was definitely worth the effort, Upham declared.

"The result: 18 satisfied customers, acquaintance with the ranking personnel in the command, support for our general policy, to say nothing of the personal satisfaction," is the way he put it.

Buildings involved were 2½-story duplex brick residences constructed about 1897 when Offutt was old Fort Crook, Upham explained. The quarters were completely renovated and redecorated in 1954, but no provision was made for air conditioning at that time because the request for exception to Air Force policy to permit its installation had been turned down by Air Force headquarters.

Air Force Reversed Original Decision

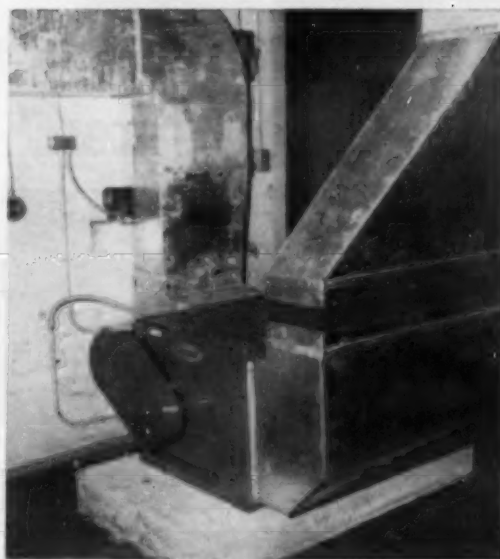
"In April, 1955, Headquarters USAF recalled the request for exception to Air Force policy, and on approximately the 16th of May the approval reached our headquarters. There was an immediate clamor for action to accomplish the installation prior



SIXTY-year-old duplex quarters occupied by officers directing the U. S. Air Force Strategic Air Command were recently air conditioned by 5-ton central air-cooled systems, a separate one serving each side of house.

to the end of the fiscal year," definite recommendations for installation. Actually, it turned out that our chief problem was

"The first step was to provide the command section with to overcome the advantage of



AIR-HANDLING unit is located in basement on concrete pad. Note motorized damper in riser to second floor permitting zone control.

expediency offered by the window type installation," Upham said.

"Several visits to unoccupied quarters indicated that there was no easy solution to the installation. Conversation with oc-

cupants of other quarters indicated the general assumption that air conditioning was 'just around the corner.'"

Faced with various proposals and counter-proposals, Upham (Continued on next page)

Conditioned Air for perfect comfort

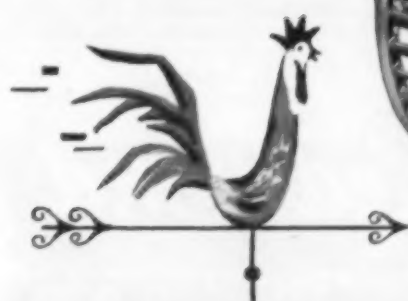


Possibly no Original Equipment Manufacturer has been more alert to its responsibilities and opportunities in the air conditioning field, than the manufacturers of Day and Night Lifeguard Forced Air Furnaces. They saw that the proper even distribution of conditioned air for year round comfort was a vital need.

MORRISON PRODUCTS, INC. have thoroughly enjoyed working with this firm in developing furnaces and air conditioning equipment of outstanding design and construction features.

Write for Blower Catalog Today

SUPER-FLO
FILTER-DRYER
UP TO 5 TONS
NO PRESSURE DROP
MOLDED REMCAL DRYING FIBERGLAS DEPTH FILTERING
Check Super-Flo's amazing low price, for both original equipment and replacement, against ordinary driers which do not have Super-Flo molded drying elements, massive fiberglass depth filters and spun-end copper shells. Available to the trade through wholesalers everywhere.
REMCO INCORPORATED
ZELIENOPLE, PA.



MORRISON PRODUCTS INC.

16816 WATERLOO ROAD
CLEVELAND 10, OHIO

Each Side of Duplex Has Separate Central System In Air Force Officers' Quarters

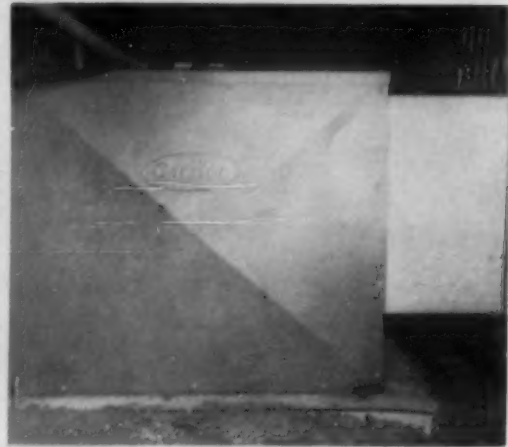
(Continued from preceding page)

revealed that "the wife of one of the ranking generals was contacted and told the advantages of the central system as we proposed. She, in turn, discussed it with other wives, which assisted in the final decision by General Curtis E. LeMay that central systems would be installed."

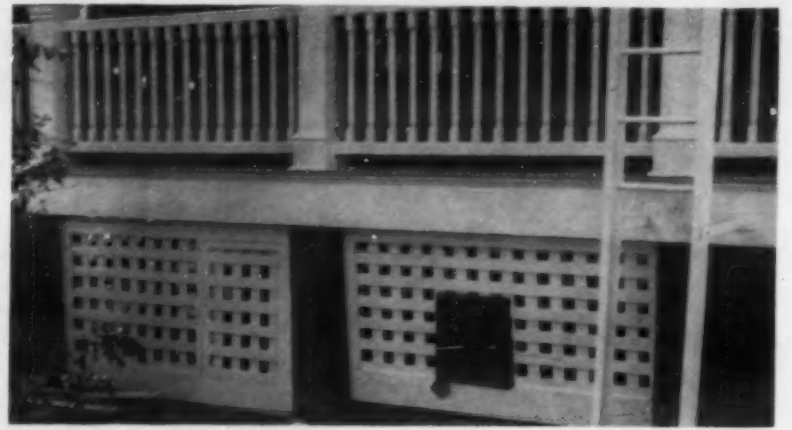
[The lady of the house shouldn't be ignored by the civilian salesman, either.]

System Designed To Minimize Damage To Newly Decorated Homes

"None of the proposed systems furnished by the manufacturers' representatives satisfied



REMOTE air-cooled condensing unit is located under side porch.



ONLY external evidence of air conditioner is grille in lattice-work of porch for air-cooled condenser.

the conditions," Upham declared. "We, therefore, set about to design a system which could be installed without chopping up the buildings and damaging the newly decorated quarters."

A pilot installation was de-

signed and approved, consisting actually of six separate designs all based on the same equipment but with widely varying duct systems in order to meet the various interior partition and utility piping arrangements, Upham explained.

"Comments on the pilot instal-

lation indicated the chief objections to the central system were: greater design and installation time required; disruption of the household, especially where small children were involved, and fear of damage to interior furnishings and decorations.

"The system, as approved for installation, is basically a central air handling unit of approximately 2,000 c.f.m. capacity located on a concrete pad in the basement, a 5-hp. air-cooled condensing unit set on a concrete base under the side porch, and a central duct air distribution system. [Entirely separate systems were installed for each "side" of the duplex houses.]

Motorized Dampers In Second Floor Riser

"Separate risers were used for the first and second floors with a thermostatically controlled motorized damper in the second floor riser. Main system control was located in the reception hall near the return air opening. The motorized damper," Upham explained, "allows the occupants to maintain temperatures on the second floors equal to or higher than the main air conditioning thermostat setting."

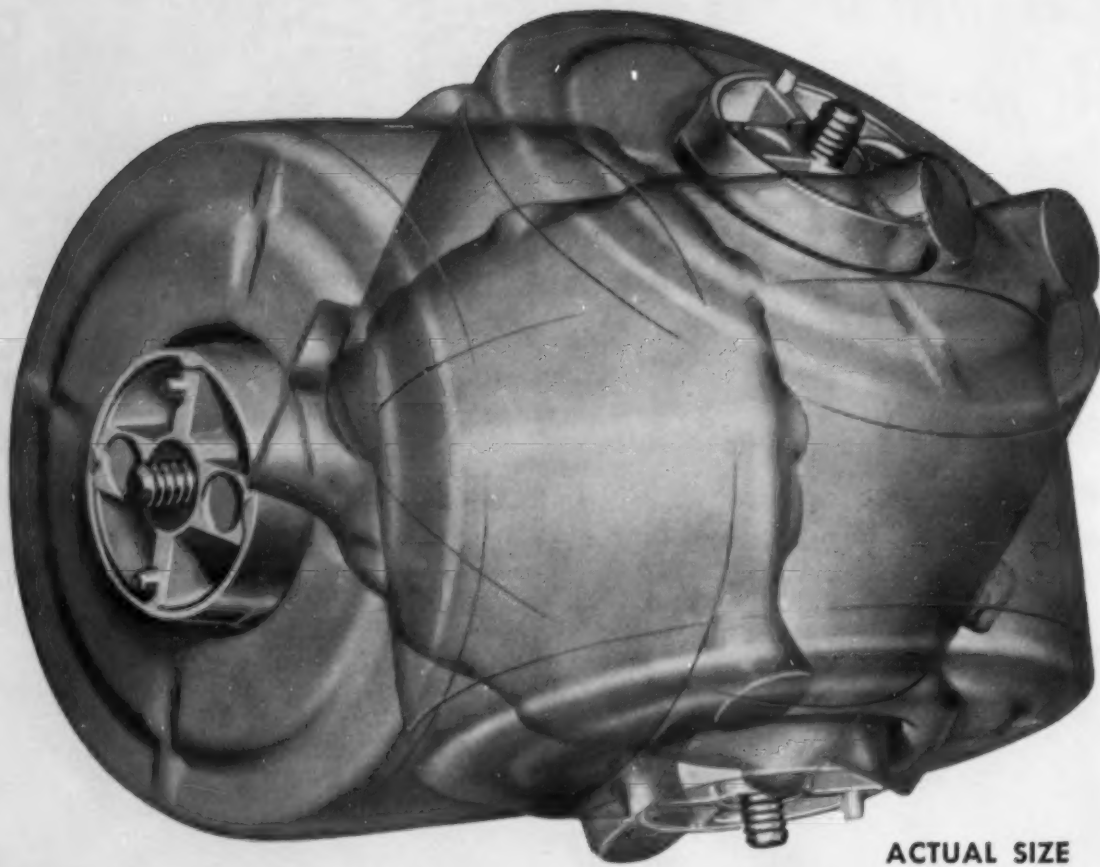
"All ducts are run in the air conditioned space and are furred in with pressed wood hardboard (masonite) on a lumber base with metal outside corners and wood molding trim to walls and ceiling. Supply air grilles are Barber-Colman double diffusion type. A single return air grille was located in the reception hall on the first floor."

Occupants Advised of Schedule and Expected Disruption of Quarters

"During the checking of final plans at the site, all occupants were briefed on the amount of noise, dust, dirt, number of

(Concluded on next page)

For All-Angle Operation...



ACTUAL SIZE

New Lightweight Redmond Single-Bearing MonoMotor

This new all-angle single-bearing condenser fan MonoMotor was developed specifically for the refrigeration and air conditioning industries in answer to modern demands for a smaller, lighter, yet more powerful motor. It is adaptable for a multitude of applications where a long-life quality motor is needed that will give years of continuous service-free use at low operating cost.

All-angle operation of the AM-4 is achieved through a special thrust bearing and pin assembly. The rotor end play is controlled to very close tolerances, which makes possible the mounting of the motor in any position without the rotor floating in the bearing.

With the new Redmond positive oiling system the AM-4 is guaranteed not to leak oil in all-angle use or in shipment. This design provides an extra large oil reservoir for lifetime lubrication. Positive oiling is achieved through the forced recirculation of the lubricant, which is completely suspended and uniformly distributed in pure wool and nylon wicks.

The basic AM-4, rated at 1½ through 16 watts, is 4-pole, 1550 RPM, 115 volts, 50/60 cycles, and is available in odd voltages and frequencies.

It will pay you to obtain complete information about this new motor by sending for the literature described below.



Send for Complete Performance Data

Write for the "AM-4 Bulletin"—it contains complete information on the design features, dimensions, performance, and operational data.



THE BIG NAME IN SMALL MOTORS

For more information about products advertised on this page use Information Center, page 21.

**AIR-CONDITIONING
MOTORS
NEVER BURN OUT**
when protected with

**MECHANICAL INDUSTRIES
PRODUCTION COMPANY**
223 ASH STREET • AKRON, OHIO

Air Force Residential Installation--

(Concluded from preceding page) workmen, hours of work, and were requested to plan to be at home during the installation," Upham said.

"On Jan. 25, 1956, Lyman and Rankin, local Carrier dealer, was awarded a contract in the amount of \$53,864 for air conditioning of the remaining 17 quarters," he explained.

"Prior to the commencement of work, a work schedule was developed. Working time from start of initial cutting to final painting was restricted to a 10-day period for all work in the occupied areas (first and second floors). Installation of equipment in the basement was also scheduled on a one-week completion basis arranged to conform to equipment shipping schedules and final completion date."

Work started Feb. 13 and was completed on schedule, all systems being in operation before May 14, 1956, Upham reported.

Arranged To Investigate All Complaints at One Time

"Following the completion of the installation, occupants expressed satisfaction with the entire procedure. It was anticipated that there would be a considered number of minor complaints relative to the individual room temperatures, etc.

"In order to correct these complaints with the minimum amount of interruption and time, a date was established at which time all complaints would be investigated and corrections made. There were less than 10 complaints, all of a very minor nature," Upham declared.

Occupants Enthusiastic About Results

After a summer's operation, what do the occupants of these quarters think about the system? Upham revealed these comments:

A major general: "The system in my quarters is absolutely tops."

A colonel: "I was rather dubious of the whole thing when it first started, but it all went off well and the installations really do the job."

Wife of a general: "I think the appearance is excellent. From all I have seen the installation is just fine. It was certainly done with the minimum of mess and fuss."

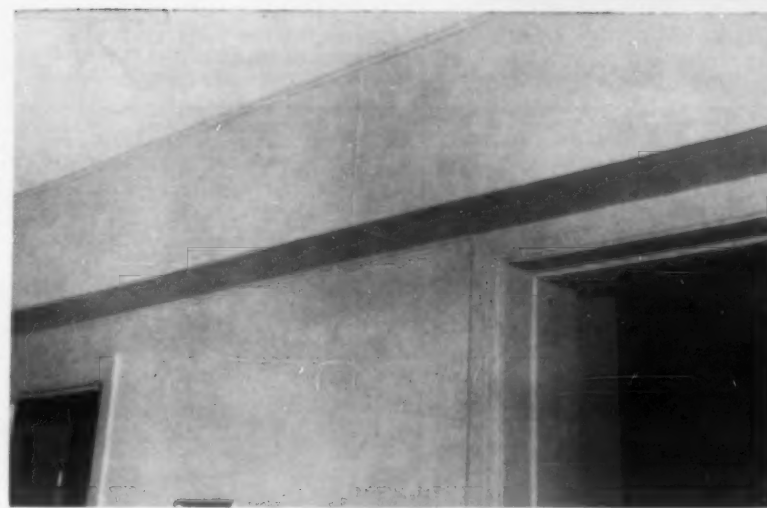
Wife of a major general: "The whole installation of your system was no worse than the installation of the window units each year. Those window units are the messiest things in the world. Putting in and taking out the units was a twice-a-year mess. One time they ruined some

of my drapes with water running out of the air conditioner, and they looked terrible after the first year, all scratched up and the grilles mashed in. You may quote me that there is no comparison between the old units and our new system."

Comments Upham: "And from our own standpoint consider the expected maintenance problems and complaints with 120 window units all in the occupied spaces as originally proposed as compared to 18 central residential units remotely located."

Based on his experiences, Upham offered several suggestions which can apply almost equally well to civilian installations as they do to similar military projects:

"1. Let everyone involved know exactly what you are at-



DUCTS were furred in to harmonize with interior.

tempting to do and why. Don't hide behind a regulation or simply express personal opinions.

"2. If absolutely necessary and if strategy dictates, pro-

pose interim installation of window units on a rental basis.

"3. Take time to develop detailed plans and specifications. Check details carefully.

"4. If project involves a

group of similar quarters, make a single unit 'pilot' installation and study all criticisms and suggestions.

"5. Restrict bidders list to contractors whose normal business is, or includes, residential type installations.

"6. Be sure the contractor knows the importance of following a close schedule and workman behavior on the job.

"7. Accomplish installation during winter months if possible with work starting in the middle or latter part of January.

"8. Provide adequate inspection and have an engineer on call to make quick decisions on necessary changes.

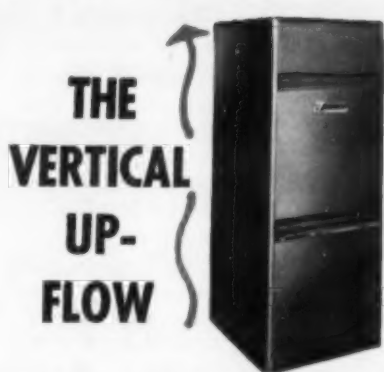
"9. Never let an occupant think that you are other than certain that your design will be the best and worth the added immediate discomfort and mess.

"10. Always have another job lined up just in case."

BUSINESS IS PROFITABLE

with Janitrol quality

Don't sacrifice your profits or reputation on "bargain-basement" brands! These gas-fired Janitrol Winter conditioners assure fewer call-backs, less servicing and greater customer satisfaction.



Always your best-seller for either new homes or modernization. Your choice of two models, either the famous Dura-tube design (with practically indestructible heat exchangers) or the Pace-setter model (popularly priced). They're compact and attractive . . . completely accessible from front. Extra quiet for installation close to living areas. 10 models 60,000 to 120,000 Btu/hr. input.



Designed specifically for perimeter-type systems used in many of the new, basementless homes. Approved for reduced clearance and closet installations. High capacity blower permits use with small duct systems. The elevated burner assembly is above floor dust and dirt. Easy front access to all parts and controls. Available in 80,000, 100,000 and 120,000 Btu/hr. inputs.

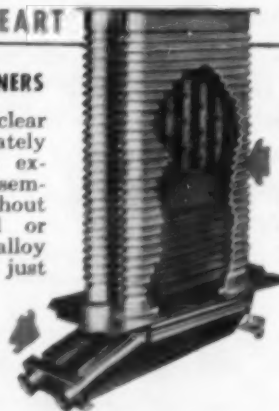


Gives you unusual flexibility. Installs suspended or on the floor in attic, crawl space, garage or basement. Adaptable to all distribution systems . . . conventional, perimeter or radiant. Easy access from either side. This model also gives top performance as a commercial-industrial unit heater. Filters are optional. Four sizes, from 65,000 to 150,000 Btu/hr. input.

THIS HEATING HEART

EXCLUSIVE • AMPLI-FIRE RIBBON BURNERS

Intense heat from a quiet, clear blue ribbon of flame is accurately centered below each heat exchanger tube. This burner assembly is easily removed without disturbing pilot, manifold or piping. The non-rusting, alloy burner ports are cleaned in just a few seconds.



MAKES THE DIFFERENCE

EXCLUSIVE • MULTI-THERMEX HEAT EXCHANGERS

Every furnace has several of these welded, die-formed steel exchangers that give extra heat transfer area . . . maximum heat extraction. This results in faster heating, higher efficiency and greater durability. Since 1940, Multi-Thermex replacements, for any cause, have been less than 1% of 1%!

Janitrol
HEATING AND AIR-CONDITIONING
DIVISION

Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Moffats Ltd., Toronto 16

PRESSTITE PERMAGUM®

Sealing Compound

- for sealing joints and seams
- for plugging and caulking in
- Supplied in beads, tape or bulk

See your wholesaler or WRITE

PRESSTITE-KEYSTONE
Engineering Products
COMPANY

39th & Chouteau St. Louis, Mo. 101 E. Ontario Chicago, Ill.

They'll
Do It
Every
Time

by

Jimmy
Hatlo



Air Conditioning for Autos Continues to Amaze Two Industries

Last year automotive air conditioning appeared to be the most rapidly rising star in our industry's firmament. Startling both the automobile and refrigeration industries, it leaped from 43,000 in 1954 to 168,000 in 1955. And, in some quarters, it was predicted that more than 400,000 units would be sold in 1956.

Also it was predicted that independent manufacturers and installers of auto air conditioners, who had been getting most of the business, would fall by the wayside quite soon.

It now appears that neither prediction will come true.

In the first place, new car sales have been disappointing this year. Moreover, at-the-factory-equipped air conditioned cars have not been in such demand as expected. Both of these factors have cut into the predicted totals for 1956.

By consolidating private advice from component-suppliers, we can venture that the 1956 model year will result in approximately 250,000 to 260,000 auto air conditioning sales. That's still a sharply rising sales curve!

Independents have been doing quite well this year, and some of them figure that they're in the business to stay. Reason: they are selling package air conditioners to owners of older cars.

And what a market that is!

Fleet owners are excellent customers, because an air conditioned car is a great boon to salesman efficiency.

Drive-yourself rental auto firms are interested customers, too, for obvious promotional reasons.

And apparently scads of private owners, the kind of folk who do not trade in old models for new ones every two or three years, for some unappraised reason do want air conditioning when they ride.

Returned guarantee cards received by

compressor manufacturers (who sell to independent installers) prove this point amazingly. The great bulk of these returned postcards (which list make and model-year of the auto) reveal that said buyers of auto-cooling own three-year-old Chevies, two-year Plymouths, and even eight-year-old Buicks. Few are putting them in brand new cars.

Automobile dealers don't want to bother with these used-car applicants for air conditioning, obviously.

In fact, the job of installing and servicing automotive air conditioners, *per se* is a headache and a nuisance, as far as they are concerned. So they are happy to leave it to air conditioning specialists.

An interesting human sidelight: owners of air conditioned automobiles get exceptionally riled up when anything goes wrong with the cooling unit. It seems that they have been spoiled by their household refrigerators! The latter run for years and years without trouble. Why, they reason unreasonably, shouldn't the cooling machine in their car do likewise?

They don't take into account vibration, road shocks, seal troubles, special installation problems caused by underhood auto design—and other problems peculiar to mobile air conditioning. (Incidentally, neither do refrigerated truck operators. They also are "spoiled" by their trouble-free experiences with stationary refrigeration.)

The surprising strength of "the old car" market augurs well for the future of the newest branch of the air conditioning industry, and for the stake of air conditioning specialists in its progress.

With the promise of excitingly redesigned 1957 automobile models, next year could be great for the air conditioned new car market, too.

If you aren't getting a piece of this business now, make plans!

Men do not build castles, or churches, or diesel trains, or even make soap for themselves. They do it for, or because of women. As a result of all this, women were never so important as they are at the present moment.—MRS. HIRAM COLE HOUGHTON, General Federation of Women's Clubs.

Trade Mark
reg. U.S. Pat.
Office;
Est. 1926

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

AIR CONDITIONING
& REFRIGERATION **NEWS**

F. M. COCKRELL, Founder

'The Conscience of the Industry'

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: \$6.00 per year; 2 years, \$9.00; 3 years, \$12.00. All other countries: \$10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

EDITOR & PUBLISHER,
George F. Taubeneck

EDITORIAL DIRECTOR,
Phil B. Redeker

ASSOCIATE EDITOR,
C. Dale Mericle

ASSISTANT EDITORS:
John Sweet

Hugh Mahar

George Hanning

Robert Lacey

RESEARCH MGR., John MacLean

ASST. GEN. MGR., Warren Jones

GEN. PROD. MGR., Walter Schuler

ADV. PROD. MGR., A. M. Barrow

CIRCULATION MGR., Herbert Spencer

SUBSCRIPTION MGR., Rosalie Ashley

READER'S SERVICE MGR.,
Vincine Mogyordoli

GEN. MGR., Edward L. Henderson

ADV. MGR., Robert M. Price

WESTERN ADV. MGR.,
Allen Schildhammer

ASST. ADV. MGR., Joe Sullivan

ADVERTISING REPRESENTATIVES:
Rex Smith

William Zurkan

ADVERTISING OFFICES:
New York, 521 Fifth Ave.

Murray Hill 2-1928-9

Robert M. Price

William Zurkan

134 S. LaSalle St.

Franklin 2-8093

Allen Schildhammer

Rex Smith

450 W. Fort St.

Woodward 2-0924

Joe Sullivan

4710 Crenshaw Blvd.

AXminster 2-9501

Justin Hannon

Member, Audit Bureau of Circulations, Member, Associated Business Publications.

VOLUME 79, No. 4, SERIAL NO. 1,436, SEPTEMBER 24, 1956



ARI SEES IMPORTANCE OF CONTRACTOR-DEALER

Air-Conditioning &
Refrigeration Institute.
Washington 6, D. C.

Editor:

The subject which you tackle in your editorial entitled, "Regaining and Retaining Confidence of Home Owners," is so important that I certainly hope you follow it with others along the same line. Certainly I am not going to make any effort to improve on what you say or on how you say it, but I should like to add such encouragement as I could to the approach to this problem.

The price situation, as you have implied, is simply a symptom of unsound conditions and practices that seem to be plaguing our industry these days. As far as central residential systems are concerned, we are badly in need of upgrading, qualitatively and quantitatively, distribution facilities.

If we are to attain our goal in residential air conditioning, a good contractor-dealer is needed to properly sell the product, to properly install it, and to see to it that it operates properly. To maintain such an organization, we must have money. The money can come only from the sales price of the product, and unless that sales price contains a margin for this purpose, we are never going to have adequate contractor-dealers in our industry.

I wish there were some way to get this thought over, and I wish there were some way, with the permission of Mr. Brownell, to get away from the tragic price-cutting that seems to be prevalent in our industry, although it is by no means limited to our industry.

I had an incident called to my attention here in Washington. A purchaser picked up a room

air conditioner in a local discount house at a ridiculous price. When the unit was installed, it was found to be defective, a situation that is faced occasionally by the best of manufacturers and by the best dealers. Of course the unit carried a warranty, and of course it must be eventually replaced by the manufacturer, but you can imagine the time consumed by the purchaser in trying to get that particular unit replaced as the result of the "smart" buy he had made.

Compare this with the almost-immediate and instantaneous replacement he would have secured from a regularly-franchised dealer.

GEO. S. JONES, JR.,
Managing Director

PEOPLE PAY FULL PRICE FOR OTHER PRODUCTS

Airtemp Div., Chrysler Corp.
Dayton 1, Ohio

Editor:

Personally, I think your editorial is not only very well written, but is very timely.

I would like to make one suggestion, though, and that is build up typical examples, such as your shoe salesman example, which could easily be done on hard goods just as effectively.

For example, if you or I—as laymen individuals—go into a hardware store or builders supply store to purchase items for Do-it-yourself Home Modernization, we pay the list price. We don't haggle because we know we would only be wasting our time.

I had an interesting experience last summer when buying a new lawn mower. The kind of a lawn mower I wanted couldn't be bought at wholesale, and the retailer dealer wouldn't cut his price. Several of our boys here in the plant have had the same

(Concluded on next page)



(Concluded from preceding page) experience buying Johnston Outboard Motors. You don't buy them wholesale and you don't get a cut on the retail price.

It is common practice to buy within your means or within established budgets, and the fact that you are trying to equalize outgoing dollars to available dollars and/or credit infers asking for a cut.

Actually the homeowner has made a decision, and is trying to value out the difference between one price or another in today's residential air conditioning business.

What I am getting at, George, is that this editorial will be read and appreciated. I sincerely hope you will keep up the good work you have started along these lines. It is urgently needed.

J. F. KNOFF

BIG MFRS. COULD PROVIDE BIG BOOST

Gibson Refrigerator Co.
Greenville, Mich.

Editor:

I would like to compliment you on another helpful "Conscience of the Industry" editorial, and I subscribe to the policies that you set out.

It certainly points up the deficiencies of the industry, and if the big companies in the industry go along with your ideas, there is no question but what the situation will be considerably improved. We will certainly do our part, but naturally cannot very well start the trend.

C. J. GIBSON, JR.,
President

IMPRESSED BY APPEAL FOR HONEST DEALING

Frigidaire Div.,
General Motors Corp.
Dayton, Ohio

Editor:

I feel that your editorial is quite pertinent. I am impressed particularly by your appeal for better selling, honest dealing, and good service on the part of the retailer or contractor.

Also, I like your comments with respect to the manufacturer's responsibility in franchising dealers.

It seems to me that the subject is well worth while.

HERMAN LEHMAN,
President

LIKES EMPHASIS ON 'BUYER'S PEACE OF MIND'

Carrier Corp.
Syracuse, N. Y.

Editor:

I think your Sept. 10 editorial is terrific and timely. I like the emphasis you have placed on the customer's desire for peace-of-mind and the fact that this results from fair dealing and trust in the contractor-dealer.

CLOUD WAMPLER

WOULD ADVISE FRIEND TO SEEK BEST DEALER'S ADVICE

Lennox Industries, Inc.
Marshalltown, Iowa

Editor:

To your editorial (Regaining and Retaining Confidence of

Home-Owners) I simply say "Amen."

I agree with your theory and like your method of expressing it.

As too many manufacturers are now hell-bent to get into the much publicized "new industry" of central residential air conditioning, a battle for dealers is inevitable. Many of these dealers will be uninformed, hit

and run operators that will injure the entire industry of air conditioning seriously.

In our business we have always "worshipped at the shrine" of the desirable dealer, and we have built our business life around living harmoniously and profitably with that dealer.

If any close personal friend of mine should ask me what kind of heating or central air conditioning to buy, my honest answer would have to be: "pick the most reliable and capable dealer in your community and buy what he wants to sell you."

The dealer actually is a lot

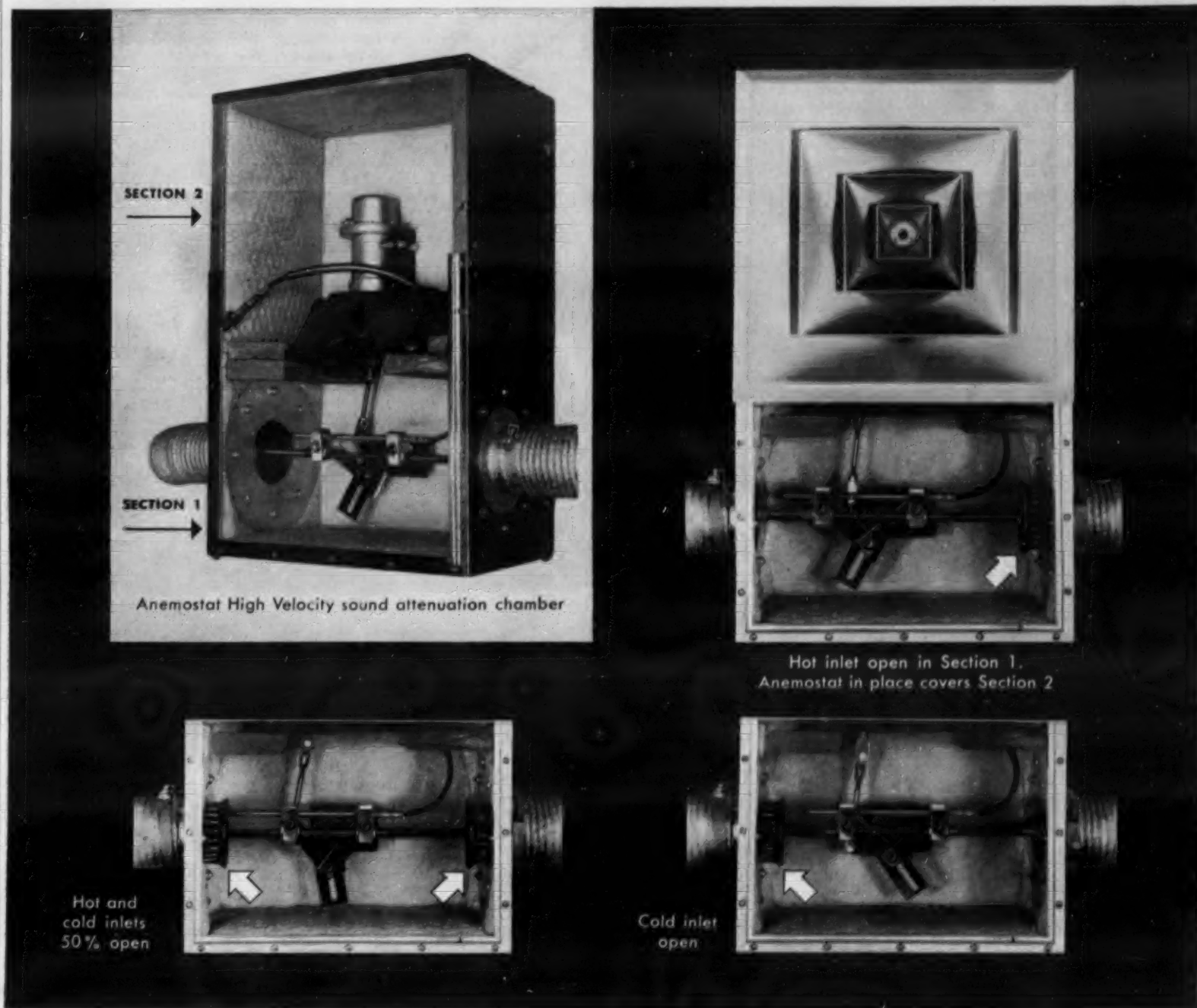
more important than the manufacturer. Where system design, and installation, and adjustment, and periodical servicing are as vital as in central system residential air conditioning, the dealer is the all important guy in this picture. My one hope is that the growing service problem with appliances and automatic home equipment of all types is acquainting the average homeowner with the importance of buying from a substantial and thoroughly reliable local dealer.

In spite of the ridiculous pricing situations which we en-

counter persistently in this crazy business, the fact seems to remain that the responsible people in residential air conditioning are still walking away with the lion's share of the business—and they are holding the price line reasonably well.

Your editorial gives emphasis to the importance of the dealer, and it might help point out to some manufacturers the shortsightedness of selling their goods through utterly irresponsible local merchants.

JOHN W. NORRIS,
President



How to mix and diffuse high velocity air automatically

The Anemostat High Velocity sound attenuation chamber is divided into two sections. Both hot and cold air from the main risers enter Section 1, which is an acoustically lined blending chamber, in which the volumes of air are controlled by the Anemostat serrated rocket-socket valves. When the thermostat is set, the rocket-socket valves move slowly back and forth, thereby adjusting the volume of air supplied through the hot and cold inlets. The velocity of the air which enters Section 1, at from 3500 to 6000 fpm, is automatically reduced by expansion.

As the blended air meets the temperature

requirements of the thermostat, it passes through a baffle arrangement into the acoustically lined Section 2 of the chamber, further reducing the db rating of the air.

The air then passes through the Anemostat Air Diffusers, where the aspiration effect causes mixing of room and supply air within the diffuser, resulting in further temperature equalization. The diffuser then delivers to the occupants of the room draft-free air at the desired temperature.

The Anemostat All-Air High Velocity distribution system offers other important advantages. It can be used with smaller

than conventional ducts. It can be installed faster and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Furthermore, Anemostat round, square and straightline diffusers with high velocity units blend into a wide variety of architectural designs.

Write for 1956 New Products Bulletin and Selection Manual 50 to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.

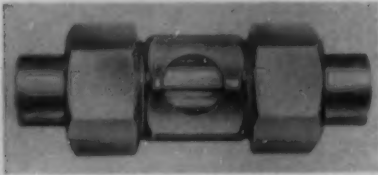
Anemostat: The Pioneer of All-Air High Velocity Systems



AC-1557

For more information about products advertised on this page use Information Center, page 21.

'Liquid Eye' Has Positive Seal Extension-Gasket



—KEY NO. F-940—

CHICAGO—Allin Mfg. Co. here recently designed a new 250 series "Liquid Eye" which is claimed to cut manufacturers' production line costs.

The series features a newly designed one-piece extension-gasket which forms a positive seal that always remains in place, the firm declared. Ready for immediate installation, the unit fits into the pre-assembly and final assembly operations to keep pace with schedules, the manufacturer further stated.

"The unit is foolproof and practically does away with rejects due to cocked gaskets, improper seal-

ing, and other assembly line errors," a spokesman stated. Smaller, more compact, the unit eliminates need for separate gaskets. It is available in six sizes of $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1 in. O.D.S. Special sizes are available to specification, it was noted.

Furnace Features Right, Left Return Air Drop

—KEY NO. F-941—

COLUMBUS, Ohio—Armstrong Furnace Co. here recently began manufacture of a return air drop to fit either left or right side of its G6, 102 furnace series.



The new drop, it is said, can be assembled and installed in less than 15 minutes. It is finished in rust-resistant blue-baked enamel.

A hole of proper size is already partially cut out on both sides of the furnace, the company stated.

Fabricated Tubing Tester Developed

—KEY NO. F-942—

CHICAGO—A new fitting, especially designed for leak testing fabricated tubing on all types of equipment, has been announced by Chicago Forging & Mfg. Co.



Offering quick, easy finger tightening and disconnecting, "Sealastic" provides a pressure-tight leakproof joint. It simplifies leak testing refrigerator evaporators, cold plates, condensers, and compressors, and also facilitates charging, flushing, and evacuation.

Being a production item available from stock, in standard sizes from $\frac{3}{16}$ in. to $\frac{1}{2}$ in., it is adaptable to a wide range of installations, eliminating design of special fittings.

Its patented construction employs a synthetic rubber seal ring in solid and ferruled assemblies.

Offer Fan, Coil Room Conditioner for Big Bldgs.

—KEY NO. F-943—

HARRISON, N. J.—A new fan and coil room air conditioner for year-round air conditioning of multi-story buildings has been announced by Worthington Corp.

A choice of recessed or cabinet-type conditioners supplies both heating and cooling in one compact unit, including air filtration and ventilation. The cabinet unit is designed for free standing mounting under a window or along a wall.

The recessed type unit is designed to be fully recessed in a wall under a window stool. The units are connected to a supply and return water piping system emanating from a remotely located central heating and cooling system which delivers the hot or chilled water.

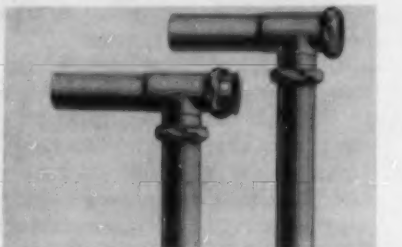
Twin blowers in the fan and coil unit draw room air through the filter, blend it with fresh filtered outside air (if desired) and direct the air over the coil



where it is cooled and dehumidified during hot weather, or heated in cold weather.

Special features include a toe plate which eliminates return air grille and allows easier cleaning of the room; a drain pipe constructed of heavy steel and coated with mastic to protect against corrosion; and three types of discharge grilles; fixed stamped non-adjustable single deflection, adjustable single deflection, and adjustable double deflection.

Another special feature is a life time lubricated fan motor connected by direct drive to the fans. Cooling coils are available in 4, 3, and 2-row design. One-row steam coil for heating in existing buildings with satisfactory steam heating system is also available.



'Tube Tee' Said To Permit Quicker Installations

—KEY NO. F-944—

NEW BRITAIN, Conn.—A new one-piece tee and tailpiece assembly was recently introduced here by Connecticut Stamping & Bending Co.

Said to cut time and labor costs by quicker installations, the "Tube Tee" presents a neat, uniform appearance. Constructed of non-porous tubing throughout, the unit eliminates possibility of sand holes resulting in a smooth interior surface and preventing buildup of waste and clogging.



One-Piece Masonry Anchor Introduced

—KEY NO. F-945—

NEW YORK CITY—Star Expansion recently developed the "Pin-Grip," a one-piece masonry anchor which is claimed that by simply driving the pin protruding from the head a permanent, tight fastening job will result.

The stainless steel pin, nested in the bored aluminum body of Pin-Grip forces out four expanding prongs which grip the wall within the masonry hole.

The unit is designed to secure pipe anchors and straps, ventilating and air conditioning ducts.



Compare the Ansul line on the left with a typical competitive line at the right.

You can see how the Ansul line will cut your dollar investment in driers up to 75%

You start to save money *immediately* when you standardize on the Ansul line of T-Flo Driers and fittings. Service engineers and contractors who have stocked the Ansul line have been able to cut their dollar investment in drier truck stock an average of 50% to 75%.

Savings like this are possible because Ansul's 4 T-Flo Drier cartridges and 8 T-Connectors are all *interchangeable*. These twelve parts give you 32 possible installation combinations. Why tie up two or three times as much money in 32 ordinary driers? The Ansul line not only provides a complete stock at a fraction of the cost, but assures a better, faster drying job. For the largest installations Ansul T-Flo Driers can be easily manifolded or used on a by-pass to provide unlimited drying capacity. No need to stock large, expensive driers that you seldom use.

Changing a T-Flo Drier cartridge is the easiest thing

in the world. Breaking leak-proof flared or sweated joints is unnecessary. Just unscrew the old drier and replace it with a new one. Hand tightening will give you a leak-proof seal. And you can install the T-Flo Drier in any position, up, down or sideways.

Ask your wholesaler about the new Dry-Eye fitting, the moisture indicator which means substantial savings in both time and money to service engineers and equipment owners. The window in the dry-eye changes color to let you see if the system is wet or dry. *Blue* means the system is dry, *pink* means excessive moisture is present.

Ansul is a national distributor for DuPont "Freon"—the time tested refrigerant. ANSUL CHEMICAL COMPANY, Marinette, Wisconsin.



For more information about products advertised on this page use Information Center, page 21.

Built-In Electronic Range Has Own Dish Set

KEY NO. F-946

ST. JOSEPH, Mich.—An RCA Whirlpool electronic range was recently added to the Whirlpool-Seeger Corp. line here, it was announced.

Designed for built-in installation, the new range has a suggested retail price of about \$1,200 which includes installation and one-year guarantee, it was noted.

Over-all dimensions are 23½ in. wide, 26½ in. high, and 22½ in. deep. Interior is 17½ in. by 11 in. by 13½ in., it was added. Exterior is of polished chrome with brushed chrome door panel and escutcheon.

Four eye-level chrome dials permit instantaneous control of functions. A main control dial starts and stops the operating energy, according to the manufacturer, a "Hi-Lo" microwave dial regulates power consumption of 3,100 and 2,400 w., respectively. There is no temperature control. Instead a microwave timer selector automatically regulates time.

When pre-determined time has elapsed, the energy is automatically shut off and a bell chime rings continuously.

A browning unit is one feature of the range. This permits ultra

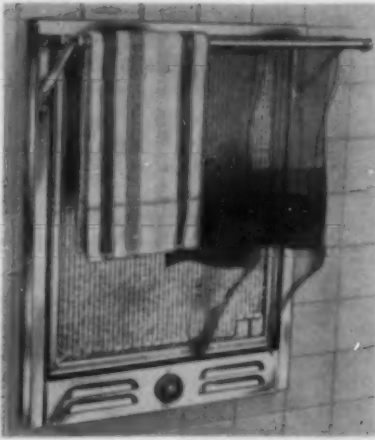


high-speed browning of small cuts of meat and other foods, using 4,000 w. for five minutes.

A set of cooking dishes has been designed to accompany the unit. This is said to eliminate necessity of removing foods from cooking utensils prior to serving.

The new electronic range requires no pre-heating, the company said. It may be plugged in to any 220 v. a.c. power outlet for immediate use. The unit operates on 2,450 megacycles at the rate of 1,000,000 microwaves a second.

All cooking is confined to an oven-like enclosure which functions just as an open range, a broiler, or a standard oven.



Radiant Glass Heating, Drying Unit Announced

KEY NO. F-948

NEW YORK CITY—Recently introduced here by Continental Radiant Glass Heating Corp. was an electrically operated radiant glass heating and drying unit for the bathroom.

A built-in thermostat insures correct temperatures and even heat, the firm said. Two towel bars warm towels or dry stockings, gloves, lingerie quickly, it was added. The model may also be used to dry hair.

Sized to fit most bathrooms, the unit is 18½ in. wide by 25½ in. high, and 1½ in. deep. It comes in chrome or neutral hammertone silver finish, or baked-on oxide for finish on the job. It runs on a.c. 120 and 240v., 625 w.

Weighing about 35 lbs., the unit comes with detachable chromium plated guards, may be surface or recessed mounted.

Electric Clock Thermostat Added

KEY NO. F-949

MINNEAPOLIS—A new model electric clock thermostat, restyled to complement interior decorating schemes, has been unveiled by Minneapolis-Honeywell Regulator Co.

Designed by industrial designer Henry Dreyfuss, the new auto-

Introduce Custom Model Food Waste Disposer

KEY NO. F-9410

CHICAGO—Hotpoint Co. recently placed on the market new custom model MW12 food waste disposer to supercede the firm's MW9 and MWP9 units.

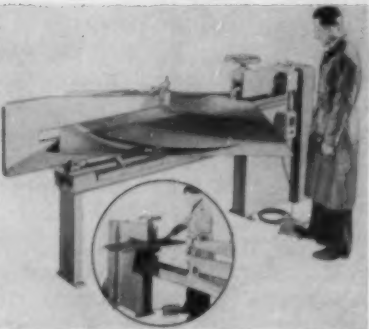


Complete line of disposers consists of continuous feed model MW11 in addition to MW12, according to the company. A new switch top turns the unit on and off and doubles as a sink stopper.

Features include faster grinding operation because of staggered cutting teeth, hammer arms pivot to prevent jamming, and quieter operation because of sound-deadening gaskets and mountings, the firm stated.

Both upper and low housings pivot 360° for easier installation, it was added.

Ring, Circle Shear Omits Variation Adjustments



KEY NO. F-947

BUFFALO—Designed with self-compensating circle arm which floats on guided ways to maintain true center automatically, a new ring and circle shear is currently being produced by Niagara Machine & Tool Works here.

Time-consuming adjustments for variations in material thickness overlap of cutters and diameter

of circle are eliminated, the firm declares.

A scale provides convenient setup, the company adds, and an adjustable crank enables quick positioning of the circle arm for cutting circles in various diameters. Actuated by a cam lever, the center clamp of the circle arm is adjustable to hold varying thicknesses of material securely.

For use in cutting both straight line work and irregular outlines not requiring sharp curvatures, circles, circular holes, and rings, the unit has capacity of 10 mild gauge steel and cuts circles from 6 through 78 in. in diameter.

A hand wheel raises or lowers the upper cutter so the operation can be started at any point. An adjustable swinging gauge for centering unmarked blanks and an adjustable straight slitting gauge are standard equipment.

Information Center

For more information on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

Products Advertised
(list name, page, and issue date)

What's New or Current Literature Available

Key No.	Key No.
Key No.	Key No.
Key No.	Key No.
Key No.	Key No.
Key No.	Key No.

Name Title

(Please Print)

Company

Street

City Zone State

Type of Business

MAIL THIS FORM TO

AIR CONDITIONING & REFRIGERATION NEWS
Readers Service Dept.

450 W. FORT ST.

DETROIT 26, MICHIGAN

Most Profitable

FACTORY-DEALER TEAM
SET-UP IN THE BUSINESS

TYPHOON
AIR CONDITIONING

- Commercial Air Conditioners, 2 to 30 tons
- Air Cooled or Water Cooled Condensers
- Residential Year-Round Units
- Packaged Heat Pumps, Residential and Commercial

Find out how a Typhoon Direct Factory Franchise can make money for you. Send in this coupon today.

Typhoon Air Conditioning Co., Inc.
505 Carroll Street, Brooklyn 15, N. Y.

Tell me about a Typhoon Franchise in my territory. Send me bulletin A-15.

Name

Firm

Address

City Zone State

"I get 100% cooperation from the Typhoon factory on every job," says Tom Barrett (left), Typhoon's Boston dealer.



for refrigeration and air conditioning

Take a look at these Wolverine products—in copper—for refrigeration and air conditioning. Four of them are illustrated here—ranging through light wall copper tube to commercial tube, Wolverine Trufin and Wolverine Capilator. You'll find that each is a product of Tubemanship—that each has been designed with refrigeration and air conditioning engineering problems in mind.

Just think of the possibilities of Wolverine Trufin for example. Because Trufin is an extended surface tube, it provides more condensing surface in less space—lets you design smaller units with much more oomph! Remember that the fins of Trufin are an integral part of the tube—that they can't come loose because of temperature fluctuations, vibration or pressure changes. Want more to think about? Then write for "Products for the Refrigeration and Air Conditioning Industry."

DIVISION OF
CALUMET & HECLA, INC.
CALUMET DIVISION
WOLVERINE TUBE DIVISION
CANADA TUBULAR
& EQUIPMENT CO., LTD.
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER CO.



WOLVERINE TUBE

Division of Calumet & Hecla, Inc.
1413 CENTRAL AVE., DETROIT 9, MICH.

Manufacturers of Quality Controlled Tubing and Extruded Aluminum Shapes

Wolverine Trufin is available in Canada through the Unifin Tube Company, London, Ontario.

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA.
SALES OFFICES IN PRINCIPAL CITIES.

Refrigeration Problems And Their Solution

By Paul Reed

For Service and Installation Engineers



Service Practices Improve Slowly (2)

Of the main cause of trouble inside the system—moisture—the Service Manager from whose talk in 1937 we quoted last week, said then as we are still saying today:

REFRIGERATION ENEMY NUMBER 1

"Of all causes of service trouble, moisture in the system

is Refrigeration Enemy Number 1. In addition to the direct result—freezing at the expansion valve, which is bad enough in itself—indirectly, moisture is the main cause of corrosion and the formation of sludges in the system.

"Any reputable manufacturer uses expensive processes for drying out his equipment, so you can feel reasonably sure that the machines, coils, expansion valves, and even installation tubing come to you dry. "The manufacturers of the re-

frigerants are very careful that their refrigerants are dry. They refer to them as 'anhydrous,' which means 'without water.' They even sample and analyze every cylinder or batch in order to be sure of the dryness.

MOISTURE FROM AIR

"From whence, then, does the moisture come? In the first place, ordinary air contains some moisture, the amount depending upon atmospheric conditions. When the equipment or installation tubing are open, moist air enters.

"If the equipment is allowed to stand open longer than is absolutely necessary, particularly in damp basements or damp days, the amount of moisture that can get into the system from the air can be considerable.

"If you want to get a surprise, take a coil of 1/2 or 5/8-in. tubing that has been lying around open for a few days, straighten it out, and raise one end higher than the other, and pound this upper end closed; and put a drinking glass at the lower end.

"Apply a torch to the upper end just enough to warm the tubing to above room temperature, and follow down the tubing to the lower end. Watch the water collect in the glass.

"Only a few drops in a system of one or two horsepower is enough to cause corrosion and probably freeze up at the expansion valve, but you may get enough water from this 50-ft. length of tubing to more than cover the bottom of the glass.

"In servicing a cold low side, be careful to not open the system if it is on a vacuum. Break the vacuum with refrigerant, to at least zero gauge. Damp air rushing in will deposit a lot of moisture in the cold evaporator.

MOISTURE FROM SERVICE CYLINDERS

"Another common source of moisture—also scale—is the refrigerant service cylinder. With frequent and repeated filling and emptying, a service cylinder is apt to be the source by which moisture gets into a clean, dry system."

Clean out your service cylinders frequently, using the method described in service manuals. (Author's note: a method of cleaning service cylinders is also described in Chapter 80—Manual J-5—Refrigeration Problems).

MOISTURE FROM OIL

"Never use any oil but our approved oil. Never let a can of oil stand open. It is not true that oil and water won't mix. Oil will absorb moisture from the air. It is much better to stock compressor oil in quart or gallon containers, but if you stock oil in 55-gal. drums, do not dip it out. Flow it out through a spigot, and put a drier on the air line into the oil drum. Keep small containers and funnels clean and dry.

MOISTURE FROM COMPRESSED AIR

"Never use ordinary compressed air to blow out refrigeration equipment. Although the air tank has a water trap, it gets only part of the water out of the air; so the compressed air is still very wet. Use dry nitrogen preferably, or if unavail-

able, we dry CO₂—not ordinary commercial CO₂ which is not very dry."

At this point our Service Manager went into a discussion of corrosion, sludges, and the effect of the presence of moisture on the formation of these undesirable conditions. We have learned some new facts about corrosion, and sludges, so this part need not be quoted.

It is interesting to note that this man, almost 20 years ago, warned against the use of certain desiccants, particularly calcium chloride. It, at least, is rarely used now.

He also warned against the use of alcohol in the system, and bluntly told his dealers that he would not replace any equipment under warranty, in which his inspection found any liquid desiccant to have been used.

RECOMMENDED DESICCANTS

He recommended that only activated alumina, silica gel, or calcium sulphate be used in the driers used on his company's products.

PURGING VS. DEEP VACUUM

Here is what he had to say on the subject of purging vs. a deep vacuum before charging a new installation; and keep in mind that it is quoted from a talk given 19 years ago.

"In the hurry and bustle of these busy days, it is common practice with some servicemen to simply purge the air from the refrigerant lines and low side. This saves time, at the time, but it doesn't get all the air out by any means, and certainly not the moisture; and is liable to cost plenty in time and money later.

"Some men think that, in purging, the refrigerant pushes the air ahead of it, thus getting all of the air out of the system. This is not true. The refrigerant and air mix with one another, and some of the air is swept out with the wasted refrigerant, but purging never gets all of the air out, and certainly it doesn't get the moisture out. The air that

is left causes higher head pressures, which, of course, lower the capacity and efficiency of the system, and increase the running time and the cost of operation.

DEEP VACUUM CHEAPEST IN THE LONG RUN

"The best practice in making a new installation is to pump a deep vacuum on the system, using a manufactured vacuum pump and not the new compressor. Connect a 1/4-in. tube to the outlet of the pump and immerse the other end of the tube in clean, clear oil in a glass.

"Run the vacuum pump until no bubbles show in the oil. Then stop the vacuum pump and let stand for about 1/2 hour, and again start the vacuum pump. No bubbles should show in the oil.

"Not only does this method remove all of the air (theoretically, there is some left, but it is negligible), but it is a good leak test, for you will not get a no-bubble vacuum if there are any leaks in the system. Moreover, it is good insurance against moisture being left in the system, for at the very low vacuum, water boils at room temperatures and the resulting vapor is pumped out of the system.

"I cannot recommend this method too highly, for those of you who have used the 'no-bubble vacuum' have found that the extra time is well worth while."

We might add to this Service Manager's recommendation 19 years ago, the recommendation made today by John Spence, service manager of Hussmann Refrigerator Co. He finds that their dealers who use the vacuum pump method, with three sweeps of refrigerant afterward, have very markedly reduced their service calls and their cost of service, which is definitely worth while, and represents a real, money-in-the-bank savings. He also recommends the use of a dewpoint indicator, which was not available 19 years ago.

(To Be Continued)

SO HALSTEAD & MITCHELL
ENGINEERS SAID:

**"LET'S STOP
COOLING TOWER
RUSTING and
ROTTING!"**

RUSTING

There's no "one-coat" protection which will stop cooling tower rust. Needed are super-strength bonding of protection to metal, toughness, inertness, flexibility, and a water-tight barrier. Only by Halstead & Mitchell are you offered the 3-coat protection of Vinsynite, Vinyl Zinc and chlorinated rubber—the most advanced protection ever devised to prevent cooling tower steel from rusting.

ROTTING

We do more than praise the long life of wood used in our wetted decks—we are the only manufacturer who offers a 20-Year Guarantee on wetted deck wood against rotting or attack by fungus.

**Halstead &
Mitchell**

BESSEMER BUILDING,
PITTSBURGH 22, PA.

AT LEADING WHOLESALEERS EVERYWHERE

**Primore
REFRIGERATION
AND AIR
CONDITIONING
Valves**

- for Household and Commercial Refrigeration
- for Residential and Automotive Air Conditioning
- for Home and Commercial Freezers
- for Condensers, Evaporators and Receivers
- for your Special Refrigeration Application

Now available—New PRIMORE CATALOG with complete data and details. Write, wire or phone for your copy today.

Primore Sales, inc.

310 National Bank Bldg. Adrian, Mich.
designing • sales • engineering



Every Primore valve has many years of refrigeration and air conditioning know-how behind it. They're precision manufactured, yet, because of hydrogen brazed steel construction and high volume production are lower in cost.



Gold Digging

is for gamblers. An engineer rates big money with a "sure thing" as a usAIRco manufacturer's representative. If you are a graduate engineer or have equivalent experience, and are well-known in your community, you may qualify to be a representative for usAIRco's self-contained central station air conditioners (RK). The usAIRco RK, in capacities up to 60 tons, is receiving sky-rocketing acceptance from architects, engineers, contractors, and industrial firms because of an aggressive promotion policy. Write today, giving a brief resume of your background, to Robert P. Kelley, sales manager, United States Air Conditioning Corporation, 7900 Tabor Road, Philadelphia 11, Pennsylvania. An interview will be arranged if your territory is open.

At Above Freezing Temperatures

Pre-Cooked Frozen Foods Ingredients Support Microbial Growth, Study Shows

SEATTLE—From the viewpoint of improving public health, increased emphasis on research in several aspects of milk and food sanitation is urgently needed, according to Dr. Keith H. Lewis, U. S. Public Health Service, who is located in Cincinnati.

Addressing the 43rd annual meeting of the International Association of Milk & Food Sanitarians, Dr. Lewis listed these areas among others considered most worthy of attention on a continuing basis:

Sees 2 Areas Worthy Of Continuing Attention

1. Determination of critical time-temperature relationships for maintaining the sanitary quality of perishable foods during the preparation and holding of them.

2. Development of standards for sanitary processing, stor-

age, and preparation for serving of pre-cooked frozen foods and other non-sterile products that are essentially ready to eat as marketed.

Bacteriology of Pre-Cooked Frozen Foods

In another major paper, Prof. H. H. Weiser of Ohio State university discussed "The Bacteriology of Pre-Cooked Frozen Foods."

He pointed out that the production, processing, storage, and distribution of pre-cooked frozen foods must have a low microbial content if the quality of the product is to be maintained.

The ingredients used in pre-cooked frozen foods are perishable and usually will support microbial growth, especially if the temperatures are above freezing, and growth can increase very rapidly if the tem-

perature approaches 68°-70° F., he indicated.

Metabolic Action Produces Off-Flavors, Off-Odors and Off-Colors

If the temperature is favorable for increased growth, the metabolic activity will produce off-flavors, off-odors, and off-colors, and may be the ultimate cause of certain types of infection, according to the professor.

Obviously, he told the conferees, a few careless producers or distributors can do much harm in creating an unfavorable impression on the part of the consuming public of the whole pre-cooked frozen food industry.

Another paper, on "Flavor Defects In Milk and Their Relationship to Farm Holding Tanks," was presented by Prof. C. C. Prouty, Washington State college.

Some observers have reported their belief that the flavor quality of milk has decreased in areas in which farm bulk holding tanks have replaced milk cans, although there is little evidence to support this view, he stated.

Important Factor To Prevent Off-Flavored Milk

Perhaps the most important factor which must be considered in assuring the absence of off-flavors in milk procured by the bulk tank system is proper training of the tank truck driver in flavor evaluation, he pointed out.

Hussmann Appoints Boston Distributor

BOSTON—Hussmann Refrigerator Co.'s appointment of Haggett Engineering Co. here as distributor of the full line of Hussmann equipment for food stores has been announced by the Boston firm.

Haggett said its showroom, service, and warehousing facilities at 1103 Commonwealth Ave. will be continued and enlarged.

Allied and related lines, including air conditioning, Blast-Freezer freezer provisioning equipment, automatic wrapping machinery, and reconditioned used equipment, will serve to complete the overall services the company offers.

Sweden Gives Cost Breakdown on Soft Ice Cream Dishes

SEATTLE—A cost breakdown on flaming parfaits and other soft ice cream dishes made by the Sweden Freezer System has been given by Sweden Freezer Mfg. Co. here.

The company explained that the flaming parfait is made with 2 oz. of soft serve, fruit topping, and whipped cream topped with a cube of sugar soaked in lemon extract.

"Lighted, the sugar burns brightly to make a dramatic dessert with a dash of showmanship," the firm pointed out. "The food cost of this item is 6½ cents."

The company said a food cost breakdown of other items discloses the following: dish of soft serve, 2.8 cents; dish of orange

sherbet, 2 cents; dessert sundae, 2.3 cents; fresh fruit shortcake, 7 cents; sundae, 9 cents; and a thick milk shake, 6 cents.

A-B Refrigerated Cabinet Div. Names Woodard To Post

ST. LOUIS—H. Stark Woodard has joined Anheuser-Busch, Inc., as service manager of the company's Refrigerated Cabinet Div., it has been announced by Fred W. Schulenberg, sales manager of the division.

As service manager, Woodard will make periodic field trips throughout the territories to provide service education to field personnel and ice cream manufacturers.

Woodard, 35, joins Anheuser-Busch after operating his own retail appliance business for 10 years.

He has had extensive experience in the field of refrigeration since 1940.

GET ABOARD THE
fabulous \$500,000.000
SOFT ICE CREAM BONANZA!

Sell the latest and greatest freezer line of them all . . . the York Automatic. Users say they're the finest, fastest and most versatile in the tremendous soft ice cream business. York Automatic Freezers are designed and built by one of the oldest manufacturers in the business. They're fully automatic . . . make not only frozen custards but regular ice cream, too. Deliver more gallons per hour. Built of extra heavy duty materials. Over-size motors used to eliminate freeze-up. Simplest, most sanitary design. Easiest to clean. Thoroughly tested.

Take advantage of this highly profitable opportunity. You'll be backed with plenty of sales aids. Exclusive franchises now open to dealers in many top territories.

WRITE FOR FACTS AND FIGURES NOW!



**AUTOMATIC FREEZER
MANUFACTURING COMPANY**

35 N. LEHMAN ST.
YORK, PA.

WHOLESALE ONLY

We sell YOU NOT your customers

● We're specialists in Refrigeration Parts and Supplies. Over 20 years of experience! . . . We maintain the most complete stock in the industry . . . Orders are filled promptly — 90% on the day received . . . These are some of the reasons we've grown to our present size!

Get this FREE Dependabook
HARRY ALTER'S Dependabook No. 164 illustrates, prices and describes over 10,000 items . . . Use it and save money!

Write TODAY on your letterhead to
The HARRY ALTER CO., INC.
1717 S. Wabash Ave., Dept. A, Chicago 16, Ill.

134 Lafayette Street New York 13, N. Y. 122 Parkhouse Street Dallas 7, Texas 690 Stewart Avenue, S.W. Atlanta 10, Ga.

LEARN about our wholesale-buyers Protection Plan

ORDER from the latest Dependabook . . . No. 164

SAVE because of our low, low prices

or visit branches

SECOND of Three Successive Advertisements

LOOK!

at these Wolverine products

--- in aluminum

STRAIGHT LENGTH ALUMINUM TUBING

MEDIUM AND EXTRA LONG COILS

WOLVERINE TRUFIN®

... THE INTEGRAL FINNED TUBE

EXTRUDED ALUMINUM SHAPES

for refrigeration and air conditioning

Lightweight aluminum is becoming more and more important to refrigeration and air conditioning manufacturers.

Here are Wolverine's outstanding entries in the field—proof positive that Wolverine is keeping pace with the trend—and positive proof that Wolverine has your problems in mind . . . and does something about them!

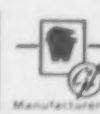
Trufin is a natural for refrigeration and air conditioning, of course! And when you need drawn or extruded aluminum tube, you'll find that Wolverine will supply it bright—clean—dry—in straight lengths or in medium or extra long length coils.

Tubemanship is a natural habit of Wolverine's. It is your guarantee of quality.

There's plenty more information in Wolverine's "Products for the Refrigeration and Air Conditioning Industry". Write for it today.

DIVISION OF CALUMET & HECLA, INC.

CALUMET DIVISION
WOLVERINE TUBE DIVISION
CANADA VULCANIZER
& EQUIPMENT CO. LTD.
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER CO.



WOLVERINE TUBE

Division of Calumet & Hecla, Inc.
1613 CENTRAL AVE., DETROIT 9, MICH.

Manufacturers of Quality Controlled Tubing and Extruded Aluminum Shapes

Wolverine Trufin is available in Canada through the Unifin Tube Company, London, Ontario.

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA.
SALES OFFICES IN PRINCIPAL CITIES.

Refrigeration Machinery Sales and General Industry Statistics for '54 Reported by U.S. Census Bureau

Table 1—General Statistics for the Refrigeration Machinery Industry, In the United States: 1954 and 1947

Item	Unit of Measure	1954	1947	Percent Change 1947-1954
Establishments	Number	586	561	+4
All employees:				
Number	Thousands	128.3	128.7	—
Payroll	Million dollars	567.1	378.6	+50
Production workers:				
Number	Thousands	98.9	107.8	—8
Man-hours	Millions	194.5	219.0	—11
Wages	Million dollars	397.0	297.8	+33
Value added by manufacture*	do	1,006.0	587.9	+71
Cost of materials, fuel, electricity, and contract work	do	?	?	—
Value of shipments	do	?	?	—
Capital expenditures, new	do	107.7	46.1	+134

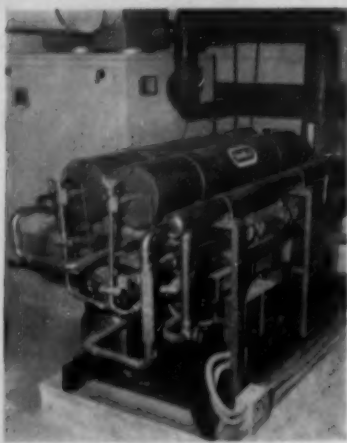
*Value of shipments less cost of materials; supplies, fuel, electric energy, and contract work.
 †Omitted because of duplication in cost of materials and value of products shipped (see introductory text).



EL RANCHO MOTEL,
HOT SPRINGS, ARK.

the Space-Saving Advantages and Inner-Fin®

All Copper Construction of a **heat-x 'PC'** PACKAGE CHILLER Sold This Job



And this has been the experience of contractors all over the country. Customers are easily "sold" on these units... appreciate the sound advice of contractors who recommend them. Here's why:

SPACE SAVING — Patented Inner-Fin® construction makes Heat-X 'PC' Package Chillers the most compact on the market.

RELIABILITY — Non-ferrous construction of all water passages eliminates danger of corrosion. Traditionally rugged Heat-X construction assures long life.

'PC' Chillers also offer the contractor several advantages (in addition to consumer satisfaction):

EASE OF HANDLING — Units are lighter in weight and smaller because Inner-Fin® construction permits more chilling capacity with less bulk.

EASE OF INSTALLATION — Units are completely "packaged"... require only water and electrical connections.

'PC' Package Chillers are available in 2 HP through 100 HP models. Request complete catalog.

HEAT-X, Inc.
BREWSTER • NEW YORK

Table 2—General Statistics for the Refrigeration Machinery Industry (S.I.C. Code 3585), by Regions and Selected States: 1954 and 1947

Region and State†	Establishments, No.	1954			1947			Value Added by Manufacture‡ (\$1,000)	Cost of Materials, etc. (\$1,000)	Value of Shipments (\$1,000)	Capital Expenditures, New (\$1,000)	All Employees, No.	Value Added by Manufacture§ (\$1,000)
		No.	Payroll (\$1,000)	Man-hours (\$1,000)	No.	Payroll (\$1,000)	Man-hours (\$1,000)						
United States...	586	128,261	567,076	98,966	194,534	396,967	1,006,013	*	*	107,698	128,677	587,928	
New England	27	7,525	34,381	5,747	11,125	24,437	62,451	*	*	4,827	6,183	26,403	
Massachusetts	13	6,234	28,584	4,799	9,249	20,798	52,821	*	*	4,398	5,565	**	
Connecticut	9	1,241	5,812	905	1,795	3,494	9,364	*	*	418	397	**	
Middle Atlantic	141	27,834	125,509	19,769	38,580	77,797	265,065	*	*	10,386	27,184	108,243	
New York	73	10,820	50,069	7,123	12,924	28,454	126,685	*	*	6,056	5,990	24,859	
New Jersey	20	3,555	16,061	2,575	4,858	9,964	21,210	*	*	819	3,002	11,368	
Pennsylvania	48	13,445	58,372	10,058	19,798	39,377	118,169	*	*	3,509	18,192	72,016	
East North Central	169	67,510	309,053	55,012	107,510	299,737	486,664	*	*	34,153	76,242	362,300	
Ohio	28	26,286	122,234	21,817	43,400	95,903	158,676	*	*	22,110	29,460	131,628	
Indiana	25	14,663	61,929	11,811	22,987	46,716	105,457	*	*	4,948	20,672	93,946	
Illinois	56	6,724	30,698	5,406	10,673	22,150	74,712	*	*	2,296	5,462	23,213	
Michigan	40	16,206	74,307	12,684	23,678	52,283	114,458	*	*	3,356	18,212	102,360	
Wisconsin	20	4,627	19,884	3,293	6,770	12,582	33,361	*	*	1,943	2,436	11,153	
West North Central	70	12,776	52,700	9,760	19,897	35,739	104,159	*	*	3,799	9,794	47,025	
Minnesota	27	4,516	17,810	3,482	6,879	12,493	36,921	*	*	1,095	5,266	23,447	
Missouri	33	5,268	22,276	3,833	7,840	14,280	37,446	*	*	**	3,531	19,858	
South Atlantic	32	2,210	7,874	1,529	3,085	4,432	12,593	*	*	**	**	**	
East South Central	13	1,914	8,133	1,227	2,490	4,102	16,884	*	*	**	**	**	
West South Central	50	2,761	9,570	2,250	4,763	6,769	24,925	*	*	870	**	**	
Texas	36	2,523	8,736	2,064	4,372	6,171	23,140	*	*	740	1,190	6,780	
Mountain	11	827	2,890	681	1,364	2,288	4,044	*	*	276	**	**	
Pacific	73	8,899	16,978	2,923	5,711	11,661	28,242	*	*	637	4,192	**	
California	60	8,664	16,121	2,783	5,435	11,175	26,847	*	*	578	4,026	19,771	

**Withheld to avoid disclosing figures for individual companies.

†Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final Census bulletin for this industry.)

‡Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

§Sum of regional figures may not equal U. S. total due to independent rounding.

*Omitted because of duplication in cost of materials and value of products shipped.

Table 3—Quantity and Value of Refrigeration Machinery Shipped By All Producers In the United States: 1954 and 1947

(Includes quantity and value of these products reported both by establishments classified in the Refrigeration Machinery Industry, and by those establishments making these items as "secondary" products in the other industries)

Product	1954		1947	
	Quantity (No. of Units)	Value (\$1,000)	Quantity (No. of Units)	Value (\$1,000)
Refrigeration machinery, total	xxx	(1)	xxx	(1)
Household refrigerators, including electric and gas	xxx	574,353	xxx	521,572
Household mechanical refrigerators:				
Complete units:				
5.4 cu. ft. and under	46,798	5,199	130,178	12,758
5.5-8.4 cu. ft.	71,455	8,490	701,005	82,951
8.5-12.4 cu. ft.	203,357	22,453	1,921,468	226,193
12.5-16.4 cu. ft.	920,944	114,638	578,895	83,975
16.5-20.4 cu. ft.	506,196	74,219	498,201	71,516
20.5 cu. ft. and over	618,518	107,445	147,643	26,079
Range-refrigerator combinations	619,911	118,107	(NA)	(NA)
Cabinets for household mechanical refrigerators (sold separately)	527,518	117,304	(NA)	(NA)
Household ice refrigerators	22,532	5,216	(NA)	(NA)
Household refrigerators, not specified by kind	xxx	(3)1,282	xxx	18,100
Home and farm freezers	xxx	172,307	xxx	100,625
Home and farm freezers, complete units (for freezing food, storing frozen food; or both purposes):				
4.4 cu. ft. and under	11,595	1,017	93,814	9,109
4.5-8.4 cu. ft.	35,757	4,856	184,435	24,234
8.5-12.4 cu. ft.	186,557	31,625	115,220	17,486
12.5-16.4 cu. ft.	358,204	70,672	99,099	19,599
16.5-20.4 cu. ft.	223,769	51,849	44,980	20,376
20.5 cu. ft. and over	44,150	12,288	37,953	9,611
Cabinets for home and farm freezers (sold separately)	xxx	(3)	xxx	210
Unitary commercial refrigeration equipment	xxx	200,813	xxx	227,969
Mechanical units (including (a) self-contained units, (b) remote units with or without condensing units, and (c) cabinets. Excluding cabinets shipped to other manufacturers of commercial refrigeration equipment):				
Reach-in refrigerators (except dairy refrigerators and wall boxes, and florists cabinets):				
25 cu. ft. and under	6,619	2,403	21,652	5,706
26-40 cu. ft.	7,803	3,340	20,295	6,323
41-60 cu. ft.	5,426	2,939	11,520	4,509
61 cu. ft. and over	3,488	2,704	6,040	3,131
Display cases for meat, dairy products, fish, and vegetables (except frozen food):				
Closed-top or single-duty	5,728	3,248	15,127	8,394
Closed-double-duty	11,466	8,352	35,676	20,027
Closed-full-vision	1,417	681	6,760	2,813
Open or self-service-single duty	25,249	14,481	9,859	5,262
Open or self-service-double duty	17,937	12,436	9,819	5,282
Low temperature freezing and dispensing equipment:				
Frozen food storage, dispensing, and display cabinets, other than coin-operated	29,216	21,598	(3)45,520	(3)19,840
Ice cream counter freezers (including frozen custard machines)	4,680	5,911	6,676	5,916
Ice cream hardening cabinets	921	453	11,115	3,444
Ice cream dispensing cabinets, other than coin-operated	72,515	23,126	(4)156,065	(4)35,875
Mechanical drinking water coolers:				
Pressure type	115,512	20,130	130,378	23,792
Bottle type	15,816	2,136	34,424	3,983
Mechanical beverage-cooling and dispensing equipment:				
Bottled beverage coolers, other than coin-operated:				
Dry type	61,586	13,386	94,517	15,761
Wet type	4,540	1,110	114,548	15,027
Bulk beverage dispensers (including malt dispensers and precooler cabinets, other than coin-operated)	42,062	6,517	18,804	2,708
Walk-in coolers	10,829	11,251	18,306	11,530
Dairy refrigerators and wall boxes	8,140	4,987	4,359	2,680
Other commercial mechanical refrigeration units (excluding farm and dairy milk coolers, including florists' cabinets, dough retarders, egg refrigeration cases, low temperature laboratory and industrial equipment, mortuary refrigerators, etc.)	xxx	25,599	xxx	8,659
Cabinets (for mechanical units) shipped to other manufacturers of commercial refrigeration equipment	xxx	642	xxx	1,264

(Continued on next page)

(Continued from preceding page)

Table 3—Quantity and Value of Refrigeration Machinery Shipped By All Producers In the United States: 1954 and 1947 (Cont.)

Farm and dairy milk coolers:				
Immersion type (mechanically refrigerated):				
5 cans and under	4,570	1,247	16,707	2,905
6 cans and over	7,271	3,906	20,856	4,880
Non-mechanical units:				
Non-mechanical bottled beverage and water coolers	23,304	1,163	(NA)	3,021
Other non-mechanical units	16,070	1,530	(NA)	2,081
Other unitary commercial refrigeration equipment including unitary commercial refrigeration equipment, not specified by kind	xxx	5,537	xxx	2,556
Automatic merchandising machines, refrigerated	xxx	44,240	xxx	28,670
Low temperature freezing and dispensing equipment:				
Frozen food storage dispensing and display cabinets, coin-operated	(5)	(5)	(3)	(3)
Ice cream dispensing cabinets, coin-operated	2,559	1,363	(4)	(4)
Mechanical beverage-cooling and dispensing equipment:				
Bottled beverage coolers, coin-operated	140,951	37,018	93,713	24,976
Bulk beverage dispensers, coin-operated	4,065	4,130	4,601	3,694
Other automatic merchandising machines, refrigerated including automatic merchandising machines, refrigerated, not specified by kind, coin-operated	xxx	(5)1,729	....	....

Table 3—Quantity and Value of Refrigeration Machinery Shipped By All Producers In the United States: 1954 and 1947 (Cont.)

Water cooled, 7½ hp. and under hermetic type:				
¾ hp. and under for household refrigeration	....	....	(8)	(8)
¾ hp. and under (except units for household refrigerators)	3,404	372		
¾ hp.	4,133	550		
1 hp.	4,623	709		
1½ hp.	3,746	882	(9)	(9)
2 hp.	5,675	1,577		
3 hp.	5,880	1,938		
5 hp.	4,125	1,915		
7½ hp.	1,034	600		
Water cooled, over 7½ hp. open type:				
10 hp.	987	998	1,885	1,731
15 hp.	964	1,309	1,033	1,244
20 hp.	678	1,093	408	654
25 hp.	433	750	308	464
30 hp.	480	801	122	263
40 hp.	371	831	149	347
50 hp.	287	754	92	276
60 hp.	....	....	....	....
75 hp.	289	971	119	473
Over 75 hp.	86	402		
Ammonia refrigerant:				
5 hp. and under	....	....	378	266
7½ hp.	18	18	205	199
10 hp.	....	....	384	496
15 hp.	63	113	407	622
20 hp.	....	....	....	....
25 hp.	40	101	273	584
Over 25 hp.	....	....	....	....

(Concluded on next page)

THIRD of Three Successive Advertisements

LOOK!

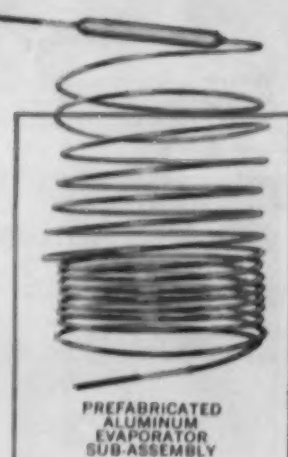
at these Wolverine fabricated products for refrigeration and air conditioning

Want to give the one-two punch to Old Man Cost? If so, here are several sound ideas.

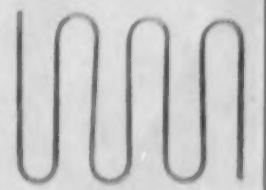
For example, here is a prefabricated evaporator sub-assembly that can deliver the knock-out blow you need. It's composed of a bunch-type coil of aluminum tube, a one-piece aluminum accumulator and two copper-to-aluminum connectors. With Wolverine delivering it to you ready to be put into your system, it will free valuable assembly floor space and man power in your plant.

Serpentine coils, strainers, driers, accumulator driers, copper-to-aluminum connectors—all these are specialized products of Wolverine's creative Tubemanship in action. All are built for you—with your needs in mind!

Better write for a copy of Wolverine's "Products for the Refrigeration and Air Conditioning Industry". It's jam-packed with ideas you can use.



PREFABRICATED ALUMINUM EVAPORATOR SUB-ASSEMBLY



SERPENTINE COILS



RECEIVERS, DRIERS, ACCUMULATORS

DIVISIONS OF CALUMET & HECLA, INC.

CALUMET DIVISION
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO., LTD.
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER CO.

WOLVERINE TUBE

Division of Calumet & Hecla, Inc.
1413 CENTRAL AVE., DETROIT 9, MICH.

Manufacturers of Quality Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA.
SALES OFFICES IN PRINCIPAL CITIES.

LARKIN CEILING HUMI-TEMP

Price is only one factor in the selection of any product—especially one that has so important a task as protecting valuable perishables. Performance must come first. Quality cannot be overlooked. Durability is highly important. Larkin has all of these. And Larkin has low prices, too. Compare them and see for yourself how low they are.

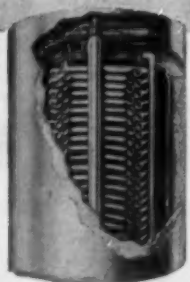
For the latest Larkin price list, see your wholesaler. If you wish, write direct to us. We shall be glad to send you one.

Manufacturers of the original Cross-Fin Coil • Humi-Temp Units • Frost-O-Trol Hot Gas Defroster • Air Cooled and Evaporative Condensers • Cooling Towers • Air Conditioning Units and Coils • Direct Expansion Water Coolers • Heat Exchangers

LARKIN COILS
519 MEMORIAL DR., S.E. • ATLANTA, GA.

Filtrine Since 1901

Tank Type WATER COOLERS



- ◆ Extra-large storage
- ◆ Safety from freeze-up
- ◆ Fast hourly recovery
- ◆ 20-year life construction

Capacities: 5 to 500 g.p.h.
Storage: 2 to 240 gals.

Water coolers for all uses factory-packaged with your condensing unit. Write for literature.

FILTRINE MFG. COMPANY
216 W. PROSPECT ST. • WALDWICK, N. J.

Redmond MICROMOTORS
One of largest stocks in the world!
FACTORY DISTRIBUTORS
MARVIN L. "FERGIE" FERGESTAD
CYCLO-FREEZE CORP.
6318 Cambridge, Mpls. 16, Minn.
West 9-6794

Product	1954		1947	
	Quantity (No. of Units)	Value (\$1,000)	Quantity (No. of Units)	Value (\$1,000)
Compressors and compressor units	xxx	162,991	xxx	63,371
For all refrigerants (except ammonia):				
For household refrigerators:				
¾ hp. and under	727,659	16,047	(6)708,351	(6)19,340
¾ hp.	....	....	(6)136,964	(6)3,099
Except for household refrigerators:				
¾ hp. and under	704,555	23,407	(6)	(6)
¾ hp.	273,555	10,386	87,852	3,203
¾ hp.	184,434	8,987	80,596	2,935
¾ hp.	554,964	27,804	35,582	1,165
1 hp.	320,364	17,504	5,799	277
1½ hp.	61,521	4,039	4,711	228
2 hp.	....	....	1,522	73
3 hp.	75,636	9,645	2,827	191
5 hp.	15,303	3,399	2,707	263
7½ hp.	5,448	1,591	4,341	869
10 hp.	1,620	926	1,279	465
15 hp.	1,055	1,155	1,453	848
20 hp.	1,182	1,414	1,773	1,177
25 hp.	1,193	1,459	674	774
30 hp.	....	....	1,358	1,279
40 hp.	1,670	2,699	309	558
50 hp.	1,010	2,287	626	1,395
60 hp.	560	1,223	639	1,301
75 hp.	276	977	224	544
100 hp.	....	....	104	339
Over 100 hp.	568	2,208	100	521
Ammonia refrigerant:				
5 hp. and under	....	....	221	111
7½ hp.	447	209	231	139
10 hp.	....	....	369	258
15 hp.	251	263	502	455
20 hp.	273	434	441	488
25 hp.	145	263	402	592
30 hp.	209	516	503	772
40 hp.	225	514	294	580
50 hp.	....	....	288	677
60 hp.	355	1,132	341	881
75 hp.	151	566	240	828
100 hp.	93	419	286	1,155
101 to 200 hp.	115	811	218	1,264
201 to 300 hp.	15	179	37	348
301 to 500 hp.	....	....	....	....
Over 500 hp.	15	321	42	932
Centrifugal refrigeration systems:				
For water and brine chilling:				
100 hp. and under	64	1,017	39	507
101 to 200 hp.	145	3,403	93	1,412
201 to 300 hp.	120	3,613	82	1,954
301 to 400 hp.	....	....	41	1,085
401 to 500 hp.	227	11,835	23	721
Over 500 hp.	....	....	50	2,013
Not reported by size	....	....	(NA)	197
Compressors and compressor units, not reported by size or type.	xxx	346	xxx	4,957
Condensing units	xxx	85,240	xxx	111,697
All refrigerants (except ammonia):				
Air cooled, open type, for household refrigerators:				
¾ hp. and under	....	....	(7)543,339	(7)17,613
¾ hp.	....	....	(7)59,809	(7)3,075
Air cooled, open type, except for household refrigerators:				
¾ hp. and under	7,099	464	(7)	(7)
¾ hp.	10,513	829	*107,249	*7,099
¾ hp.	10,090	1,075	198,686	14,698
¾ hp.	6,904	960	103,828	9,952
1 hp.	6,276	1,117	51,434	6,945
1½ hp.	3,758	924	21,639	3,641
2 hp.	3,744	1,026	12,650	2,624
3 hp.	....	....	8,325	1,931
5 hp.	3,076	1,090	3,880	1,128
Air cooled, hermetic type:				
¾ hp. and under for household refrigerators	324,460	21,541	(7)	(7)
¾ hp. and under (except units for household refriger.)	263,326	15,568	....	....
¾ hp.	97,275	6,571	149,103	11,148
¾ hp.	52,843	4,508	86,218	5,514
¾ hp.	20,688	2,261	....	....
1 hp.	14,915	2,092	19,658	1,775
Over 1 hp.	15,655	3,678	....	....
Water cooled, 7½ hp. and under, open type:				
¾ hp. and under for household refrigerators	....	....	(8)674	(8)66
¾ hp. and under (except for household refrigerators)	243	29	....	....
¾ hp.	1,509	200	(9)7,222	(9)918
¾ hp.	2,041	332	(9)6,859	(9)1,094
1 hp.	2,092	408	(9)6,331	(9)1,139
1½ hp.	2,411	598	(9)5,720	(9)1,274
2 hp.	2,527	703	(9)4,278	(9)1,071
3 hp.	2,803	990	(9)5,603	(9)1,562
5 hp.	....	....	(9)5,386	(9)2,258
7½ hp.	3,214	1,822	(9)2,356	(9)1,598

For more information about products advertised on this page use Information Center, page 21.

(Concluded from preceding page)

Table 3—Quantity and Value of Refrigeration Machinery Shipped By All Producers In the United States: 1954 and 1947 (Cont.)

Product	1954		1947	
	Quantity (No. of Units)	Value (\$1,000)	Quantity (No. of Units)	Value (\$1,000)
Condensing units, 1/4 hp. and over, not reported by size or type	...	...	65,033	5,965
Other refrigeration machinery and air conditioning equipment...	xxx	707,643	xxx	213,802
Packaged air conditioning equipment:				
Self-contained air conditioners:				
Window-sill type:				
1/4 hp.	53,731	6,413		
1/2 hp.	214,876	22,159		
3/4 hp.	888,659	116,791		
1 hp.	346,230	71,014		
Over 1 hp.-1 1/2 hp.	41,357	12,027		
Other than window-sill (except units for year-round air conditioning systems):			42,904	9,930
Under 1 hp.	3,657	758		
1 hp.	5,307	1,720		
1 1/2 hp.	4,977	2,153		
2 tons and over excluding units intended for residential use:				
2 tons	4,725	3,074	1,179	893



They all Like



Above: Orange Juice Concentrating Plants Prefer Frick Heat Pumps and Refrigeration

Refrigeration



Freezer with Overhead Coils at Sea-board Fish Co., Baltimore, Maryland



Frozen Fruit Storage, 197 by 195 by 18 ft. High, Held at Minus 10°



Freezer Storage Cooled with Frick Square-finned Pipe, Benton Harbor, Michigan

Fruit and vegetable growers, concentrators, packers, canners, quick-freezers, warehousemen, shippers, and others throughout the food industries specify Frick equipment because of its EXTRA value.

EXTRA experience, EXTRA engineering, and EXTRA economy are built into Frick refrigerating, ice making, quick freezing and air conditioning machinery. Thousands of installations prove it: let us show you the nearest ones, and submit figures on your needs.

FRICK COMPANY
Waynesboro, Pennsylvania



Unit Air Cooler Holding Low Temperatures with Ammonia Refrigeration

3 tons	17,885	11,968	8,243	5,292
5 tons	28,198	25,905	17,978	15,750
7 1/2 tons	15,591	18,544	1,572	2,096
10 tons	7,063	11,639	897	1,821
15 tons	3,764	8,730	569	1,265
20 tons	685	2,262	184	468
Over 20 tons	419	2,102	251	957
Not reported by size	...	...	1,199	737
Year-round air conditioners, self-contained:				
Except heat pumps (complete with furnace)	15,932	16,652	(NA)	(NA)
Heat pumps (except room air conditioners)	1,900	2,881	(NA)	(NA)
Residential-type self-contained air conditioners	46,521	26,040	(NA)	(NA)
Refrigeration chassis for air conditioning	2,428	4,274	(NA)	(NA)
Packaged liquid chillers	352	2,657	xxx	(10)175
Absorption and adsorption systems and equipment	23,162	10,305	7,822	3,122
Ice making machines:				
Packaged (self-contained)	(NA)	1,655		
All others (not self-cont'd)	104,107	7,536	(NA)	(NA)
Mechanical dehumidifiers, refrigerated type (self-contained)				
Heat exchanger equipment:				
Evaporative condensers:				
5 tons and under	716	220	(NA)	448
5.1 to 7.5 tons	341	187	(NA)	264
7.6 to 10 tons	208	153	(NA)	467
10.1 to 15 tons	510	405	(NA)	528
15.1 to 20 tons	399	408	(NA)	445
20.1 to 30 tons	927	1,154	(NA)	1,334
30.1 to 50 tons	1,143	1,871	(NA)	1,972
50.1 to 100 tons			(NA)	2,185
Over 100 tons	1,430	4,375	(NA)	232
Air conditioning units not self-contained:				
Suitable for location below the window:				
Motor driven fan type	55,453	5,534	(NA)	(NA)
Induced-air type	32,767	2,864	(NA)	(NA)
All other:				
3 tons and under	4,575	797	(NA)	545
3.1 to 5 tons	2,171	938	(NA)	916
5.1 to 10 tons	2,984	1,772	(NA)	979
10.1 to 25 tons	4,469	4,282	(NA)	2,276
25.1 to 50 tons	2,700	3,913	(NA)	
Over 50 tons	884	2,040	(NA)	1,492
Unit coolers (refrigeration):				
Ceiling and wall mounted types:				
1,000 B.t.u./hr. and under	3,396	119	(NA)	101
1,001 to 2,000 B.t.u./hr.	27,800	1,099	(NA)	1,065
2,001 to 4,000 B.t.u./hr.	14,985	1,420	(NA)	1,083
4,001 to 6,000 B.t.u./hr.	12,591	1,108	(NA)	909
6,001 to 8,000 B.t.u./hr.	7,195	1,105	(NA)	1,324
8,001 to 12,000 B.t.u./hr.	8,094	1,487	(NA)	1,410
12,001 to 18,000 B.t.u./hr.	6,340	1,544	(NA)	1,695
Over 18,000 B.t.u./hr.	4,659	1,470	(NA)	1,621
Floor mounted (dry type):				
5 tons and under	452	220	(NA)	767
5.1 to 7.5 tons	325	460	(NA)	785
7.6 to 10 tons	234	316	(NA)	531
10.1 to 15 tons	569	613	(NA)	429
Over 15 tons	1,282	2,113	(NA)	172
Floor mounted (spray type):				
5 tons and under	52	58	(NA)	52
5.1 to 7.5 tons	385	994	(NA)	812
7.6 to 10 tons	113	225	(NA)	197
10.1 to 15 tons	158	382	(NA)	431
Over 15 tons			(NA)	575
Shell-and-tube and shell-and-coil condensers	xxx	11,280	xxx	5,909
Shell-and-tube liquid coolers	xxx	4,025	xxx	1,242
Shell-and-coil liquid coolers	xxx	1,632	xxx	426
Fin-coils-steam (except forced air units)	xxx	4,835	xxx	5,358
Fin-coils-water (except forced air units)	xxx	7,840	xxx	10,415
Fin-coils-direct expansion (excluding the bunker gravity-type refrigeration coils)	xxx	10,690	xxx	(NA)
Plate-type evaporators (including bunker gravity type refrigeration coils)	xxx	6,898	xxx	4,902
Surface dehumidifiers	xxx	4,832	xxx	(NA)
Air-cooled condensers	xxx	(11)	(NA)	(NA)
Factory assembled water-cooling towers	(NA)	20,694	(NA)	(NA)
Other heat-exchanger equipment, including tube-in-tube liquid coolers, tube-in-tube condensers, and suction-line heat exchangers	xxx	4,405	xxx	(NA)
Other components and accessories for air conditioning & refrigeration equipment	xxx	(11)165,138	xxx	(10)77,023
Other refrigeration machinery and air conditioning equipment, not specified by kind	xxx	14,359	xxx	37,885

*Revised. ... Represents zero. xxx Not applicable. NA Not available.

- (1) The total value of shipments of refrigeration machinery omitted because of extensive duplication resulting from the use of products of certain establishments as materials by others. See text for more detailed discussion.
- (2) 1954 value for cabinets for home and farm freezers (sold separately) included with cabinets for household mechanical refrigerators (sold separately).
- (3) 1947 shipments of frozen food storage, dispensing, and display cabinets, coin-operated, included with frozen food storage, dispensing, and display cabinets, other than coin-operated.
- (4) 1947 shipments of ice cream dispensing cabinets, coin-operated, are included with ice cream dispensing cabinets, other than coin-operated.
- (5) 1954 shipments of frozen food storage, dispensing, and display cabinets, coin-operated, are included with other automatic refrigerated merchandising machine, coin-operated.
- (6) 1947 shipments of compressors and compressor units 1/4 hp. and under, except for household refrigerators, are included with compressors and compressor units for household refrigerators.
- (7) 1947 shipments of air-cooled condensing units 1/4 hp. and under, except for household refrigerators, open and hermetic types and hermetic type for household refrigerators are included with air-cooled open-type condensing units for household refrigerator.
- (8) 1947 shipments of water-cooled hermetic type condensing units 1/4 hp. and under are included with water-cooled open-type condensing units 1/4 hp. and under.
- (9) 1947 shipments of water-cooled hermetic type condensing units are included with water-cooled open-type condensing units of corresponding sizes.
- (10) 1947 shipments of adsorption and absorption systems and equipment are included with other components and accessories for air conditioning and refrigeration equipment.
- (11) 1954 shipments of air-cooled condensers are included with other components and accessories for air conditioning and refrigeration equipment.

Reading Tube Names Kelly Purchasing Agent

READING, Pa. — Appointment of William C. Kelly as purchasing agent of Reading Tube Corp. was announced recently by Martin Mack, president.



Kelly has been associated with the producer of copper and brass tubing in the capacity of assistant office manager for the past two years, it was noted.

He is a director of the National Association of Cost Accountants.

IDEAL
Speed-Freeze
PRODUCTS

BEVERAGE COOLERS AND INSTANTANEOUS DRAFT BEER COOLERS.
(With Refrigerated Faucets)

WRITE
IDEAL COOLER CORPORATION
2953 EASTON AVE. • ST. LOUIS 8, MO.

ASPIR-JET
SPRAY NOZZLES RAISE
TOWER EFFICIENCY

The swirling, atomizing action of the water as it goes through the Aspir-Jet means more effective heat transfer and higher efficiency from any spray-filled cooling tower. Pressure as low as 1/2 pound gives effective water break-up and distribution. Formed of butyrate plastic, Aspir-Jets will not corrode.

• Available through Refrigeration and Air Conditioning Wholesalers.

Manufacturers & Refrigeration Wholesalers: if you are not now using or stocking this astounding new product, wire or write

THERMAL AGENCY

National Sales Agents
1515 DALLAS • HOUSTON, TEXAS

BANISH

STUCK PUMPS

WITH
PUMP-AID

THE GARMAN COMPANY
1253 Grover Rd., St. Louis 23, Mo.

Please send me Pump-Aid literature.

NAME.....

FIRM.....

ADDRESS.....

CITY.....ZONE.....STATE.....

DEPENDABLE REFRIGERATION SINCE 1882
FRICK Co.
WAYNESBORO, PENNA. U.S.A.



ACCEPTING KEY TO new sports car that is his reward for selling \$130,000 of air conditioning equipment in three months is Harris Buell (inside car), sales representative of Temp-Matic Wholesalers, Inc., Detroit. On hand to congratulate him are (l. to r.) B. W. Henn, Westinghouse district sales manager, Fry Ayers, Detroit district manager for Westinghouse, and T. H. Mabley, vice president of Temp-Matic.

Top Wholesaler Salesman Tells How He Won Sports Car Prize In Contest

DETROIT—The fundamentals of selling have paid off again.

Harris H. Buell, sales representative for Temp-Matic Wholesalers, Inc. here, has a new Ford Thunderbird to prove it.

He won the car by selling \$130,000 worth of Westinghouse commercial and residential air conditioning equipment to dealers in the three months from Jan. 23 to April 20.

He was one of 25 distributor salesmen to win cars in a nationwide spring sales contest held by Westinghouse Electric Corp.

How did he do it? There was no magic formula involved, said Buell, just perseverance, hard work, and long hours. Just make the calls and you get the sales.

Buell, who has been selling air conditioning for some 20 years, recalled that he made a fast trip to Pittsburgh for the Jan. 22 sales meeting that kicked off the contest. He returned to Detroit that night.

Makes List of Accounts

He spent the next day making a list of all his accounts in the Detroit area. Then he got on the telephone and made appointments to see prospective dealers. That done, he put on his hiking shoes and made personal calls.

Buell recalls that he made calls on Saturday, during evenings, and any time he could find a dealer with time to listen to his story. He says he averaged 12 hours a day on the job, six days a week for the period.

It was not easy. The entire three months in Detroit were marked with cold weather coupled with snow and rain—more than usual by a good deal. It was far from ideal weather for an air conditioning story.

Makes Second, Third Call To Close Deal

Buell said that on his first call, he spent all the time he could explaining completely the entire Westinghouse program and what it offered the dealer. Only if circumstances appeared right did he ask for the order. He would make a second or third call to close the deal.

Then he would help the dealer set up an advertising program, a sales promotion program, and special sales prizes.

Buell made a few sales at the beginning. But they came slowly after that. Then toward the end, they came in rapidly. Buell had never considered himself as a challenger for the car.

T. H. Mabley, vice president and treasurer of Temp-Matic,

credited Buell with a big assist in doubling the firm's sales volume for the first half of 1956.

I-B-R Builds Baseboard, Finned-Tube Radiation Check Test Laboratory

NEW YORK CITY—Construction of a highly specialized testing laboratory for the Institute of Boiler & Radiator Mfrs. is expected to be underway shortly at Urbana, Ill.

Plans were announced here recently by Robert E. Ferry, general manager of I-B-R.

Purpose of the lab, Ferry said, will be to provide check tests on baseboards and finned-tube type of radiation where I-B-R ratings are involved, supplementing original tests conducted by the individual producers.

Warren S. Harris, associate research professor of mechanical engineering who conducts the I-B-R research program at the University of Illinois, will supervise the lab until a permanent director is named. Prof. Harris has supervised research work on residential heating and cooling in the I-B-R Research Home at Urbana since 1940.

It was indicated that about five persons will be employed in the laboratory on a full-time basis.

"This laboratory will not be associated in any way with the University of Illinois as the I-B-R research program is," Ferry noted. "The lab will be owned and operated solely by I-B-R."

He said work would continue on the regular research program which Prof. Harris supervises at the I-B-R Research Home in cooperation with the university.

Bank Bldg. Conditioned

PELZER, S. C.—Air conditioned building to house the new Pelzer-Williamston Bank is nearing completion at the Pelzer Shopping Center.



A DEMONSTRATION unit of Dunham-Bush, Inc. illustrates the firm's "Vari-Air" system for heating, ventilating, and cooling schools and public buildings without complicated controls. As shown, the unit is reduced in size.



Highly flexible, Armaflex follows contours of piping or tubing without any special cutting or fitting. If lines are in operation, slit Armaflex lengthwise, snap in place, and seal with Armstrong 520 Adhesive.

New insulation for liquid cooling and heating lines goes on in one fast operation

Armstrong Armaflex® is a new kind of foamed plastic insulation for both commercial and residential air-conditioning and heating lines. Remarkably flexible, it slips right over pipes and copper tubing, follows contours without special cutting or fitting. If lines are already in operation, you can slit Armaflex lengthwise, snap in place, and seal with Armstrong 520 Adhesive. Armaflex is clean to work with, too; it will not rub off, chip, or crumble. Waste is negligible.

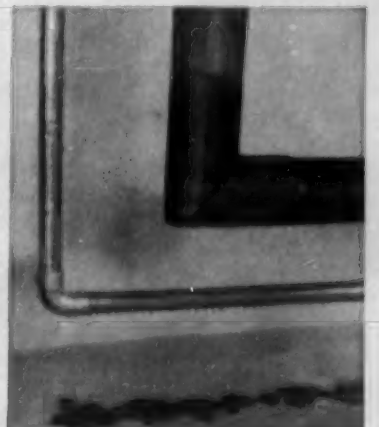
A highly efficient material, Armaflex has a K-factor of 0.28 at 75° F. In 1/2" thickness, Armaflex will prevent condensation under normal design conditions on indoor lines operating as low as 32° F. The insulation's closed cellular structure is exceptionally moisture resistant, eliminates the need for a separate vapor barrier. A self-extinguishing feature makes Armaflex completely safe to install before sweat fittings are made.

Armaflex comes in 6' lengths for copper tubing and iron pipe 3/8" to 3 1/2" O.D. Thicknesses of 1/2" and 3/4" are available.

For free booklet containing complete data on this remarkable new insulation, write to Armstrong Cork Co., 2009 Parsons Street, Lancaster, Pa.



Residential as well as commercial air-conditioning and heating systems perform more efficiently when insulated with Armstrong Armaflex. It goes on fast, makes a neat, clean job.



Condensation is prevented by Armaflex's vaporproof composition. Countless, uniformly sized cells seal out moisture and air, give Armaflex its low K-factor of 0.28 at 75° F. mean temperature.



Rapid fabrication of fitting covers is accomplished by miter-cutting pieces of Armstrong Armaflex, cementing them together with Armstrong 520 Adhesive to form a vaporproof joint.

Armstrong
INDUSTRIAL INSULATIONS

For more information about products advertised on this page use Information Center, page 21.

Servicing Weathertron Heat Pumps (12)

Originally just a theory and for many years subject only to occasional experimental installations, the heat pump of late has developed into a practical and expanding business.

Design, manufacturing, sale, installation, and service of the heat pump have already become important factors in the air conditioning industry, and are bound to grow.

In recognition of the present stage of development, and the expected future, the News is presenting herewith a series of articles on servicing a specific make of heat pump—the General Electric air-to-air "Weathertron."

SERVICE ANALYSIS

The service analysis on the C model Weathertron has been written to include a complete check of each component and its allied controls. Checking all components as described will insure correct operation of the unit.

To find the section or sections which must be checked go to the Index of Symptoms. Here is listed the symptoms and the particular component service section (in parenthesis) which pertains to your symptom. If you recognize immediately a particular component at fault, then you can go directly to its service section for the check.

Note: On suspected refrigeration system problems be sure and check first all allied electrical components which will

give the same type symptoms. The service analysis can not provide for broken wires or loose terminal screws. Prior to trouble shooting, check these items as well as the power supply to the unit and any overloads which may need resetting.

INDEX OF SYMPTOMS NO COOLING or NO HEATING (A, B, E, H).

Motors do not start (A, B). Compressor motor runs but OD fan motor does not (B). Compressor motor runs but ID fan motor does not (B). Cuts out on high head (E). Overloads during heating operation above 30° F. (E). Refrigeration system (H).

OPPOSITE OPERATION (A, C).

Heats when thermostat calls for cooling (A, C). Cools when thermostat calls for heating (A, C).

LOW CAPACITY COOLING (A, D, H).

Thermostat seems to be out of calibration (A). Icing of the indoor coil (D). Refrigeration system (H).

LOW CAPACITY HEATING (A, C, D, E, F, H).

Thermostat seems to be out of calibration (A). Heats when relays call for defrost (C). Low capacity (D).

Low capacity below 30° F. (E). Low capacity below 40° F. (F). Defrost too frequently (G). Does not defrost frequently enough (G). Will not defrost (G). Stays on defrost continually (G). Cold draft during defrost (G). Refrigeration system (H).

A. WEATHERTRON THERMOSTAT AND RELAY (WORKING-W, HEATING-H, AND FAN-FR) COILS.

SYMPTOMS

Motors do not start. Heats when thermostat calls for cooling. Cools when thermostat calls for heating. Remove thermostat wire from 21.

Check for voltage across 21 and 18.

No Voltage:

Check internal and external fuses. Check control transformer.

Voltage:

Jumper 21 and 22 and observe W.

W does not close:

Check W coil.

W closes:

Jumper 21 and 23 and observe H.

H does not close:

Check H coil. Check D-3 contact—normally closed side.

H closes:

Jumper 21 and 24 and observe FR.

FR does not close:

Check FR coil.

W, H, and FR close:

Check with continuity light at thermostat terminals to see if thermostat contacts close correctly (Caution: turn power supply off first).

Thermostat checks:

Check for broken or open leads:

—from thermostat terminal V to unit terminal strip 21, and —from thermostat terminal C to unit terminal strip 22, and —from thermostat terminal H to unit terminal strip 23, and —from thermostat terminal F to unit terminal strip 24.

SYMPTOMS

Thermostat seems to be out of calibration.

Check to see if thermostat is level.

Jumper 21 to 23.

H coil energizes but compressor does not start:

H-2 contact dirty or defective. This condition can also be observed by watching the unit under normal operation. If the H-2 contact is defective the motor starter and supplementary heaters will come on together (below 40° F.).

H coil energizes and compressor starts:

Refer to setting and adjusting of Weathertron thermostat in preceding section.

(To Be Continued)

Frick Names Pappas

HOUSTON, Texas — Appointment of the Pappas Refrigeration Co. as distributor for Frick air conditioning and refrigeration equipment in southern Texas was announced recently by the Frick Co.

Pappas has branches at San Antonio and Beaumont.



PURDUE UNIVERSITY CENTER for Refrigeration and Climate Control has buildings already constructed, but not yet equipped. Prof. W. E. Fontaine of the School of Mechanical Engineering (pointing) who will direct the engineering research programs at the Center, points out to visiting group from the industry the proposed plans for equipment in one of the wings of the Center.



PURDUE'S PRESIDENT FRED HOVDE (left at head of table) describes the proposed program at the Research Center to a group from the air conditioning and refrigeration industry, and from the food industry, and asks for assistance in completing the facilities of the Center and providing for a staff. This would be the first time that Purdue would be working directly with an industry, President Hovde pointed out, with the results of the research being made directly available to the sponsoring organizations and the industry generally.

Purdue Refrigeration Research Center--

(Continued from Page 1)

benefit for the industry in that it will serve to interest undergraduate and graduate engineers in making their careers in the industry, and thus furnish a manpower pool, which is now sadly lacking.

A faculty committee will determine the projects to be undertaken by the Center, with suggestions from industry sponsors being welcomed.

Building Is Available, Funds for Research Sought

The building and some capital facilities have already been erected, a gift of the Herrick Foundation and Tecumseh Products Co., at a cost of some \$300,000.

Purdue is applying \$252,500 of its own funds to defray part of the cost for research operations (in staff salaries and supplies) for three years of operation.

Being sought from the industry is \$315,900 in grants of money and equipment to furnish equipment and instrumentation for the research activities and \$285,000 for the additional cost of research operations over the three-year period.

First Special Industry Research Program for Purdue University

As President Hovde pointed out, this will mark the first time that Purdue has tried out the idea of working with a particular industry on a research program. Individual companies are being invited to participate in one (or a combination) of three different ways:

(1) Providing financial sup-

port for the basic research program.

(2) Providing equipment for use in research at the Center.

(3) Arranging for specific research, on a separate contract basis, for some individual problem that the company might submit.

Among the specific benefits which the sponsoring industry companies will receive are listed the following:

Contact with the graduate students who will work on the various projects, and an opportunity to interest them in careers in the industry.

Advance information of all developments within the Center will be available to sponsors. Also, exchange of ideas will be guaranteed to sponsors by regular

(Concluded on next page)

MARSH Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.

PRESSURE GAUGES and Dial Thermometers for all services.

MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.

MARSH INSTRUMENT COMPANY

Sole Affiliates of J. P. Marsh Corporation

Dept. D., Skokie, Ill.

Phoson solves "hidden joint" assembly brazing problems!

Everyday... this leading manufacturer PHOSON brazes over 5400 hard to see and reach copper joints. Even though hidden deep down in air conditioning unit assemblies, "leaker" rejections are less than 1/2 of 1%!

High capillary attraction at low temperature, without flux, make United's Phoson 6 perfect for such tough "in close" brazing jobs.

Copper U-Bend Coil connections, too, are brazed best with Phoson 6 brazing rings making high-volume automation easy, effective and profitable.

For all types of hand fed or automatic copper brazing, Phoson 6 has every desirable characteristic you want... high capillary attraction, lowest possible brazing temperature, greatest resistance to vibration and lowest possible cost.

*Name on request



UNITED WIRE

AND SUPPLY CORPORATION

COPPER, BRASS AND ALUMINUM WIRE AND TUBING, AND BRAZING ALLOYS

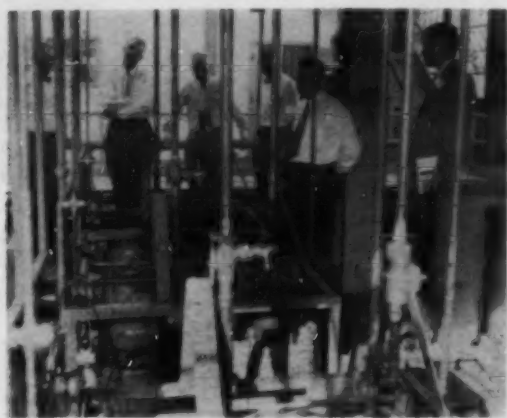
PROVIDENCE 7, RHODE ISLAND

NOLIN

MEAT DISPLAY CASES

● BEAUTIFUL
● ECONOMICAL
● DURABLE
● PROFITABLE

NOLIN MANUFACTURING COMPANY
1400 LLOYD ST. PH. 3-4454
MONTGOMERY, ALABAMA



MANY RESEARCH PROJECTS relating to problems in the air conditioning and refrigeration industry have been undertaken by Purdue's School of Mechanical Engineering with its present limited facilities for such work, as the visitors saw in a tour of the School, so there is a foundation of staff knowledge on the subject. However, a completely equipped Center will permit broader and more intensive research activities.

Purdue Center --

(Concluded from preceding page) lar meetings of the Center staff and the sponsor's representatives. Basic industry research information developed at the Center will be made available to sponsors on a regular basis.

Should any patentable information be developed, each sponsor will receive a free, non-transferable, non-exclusive license on such patents.

Pinpoint research aimed at a specific problem can be contracted for at any time. During the progress of these investigations, reports will be made only to the individual sponsor.

Environmental Physiology Test In Living Quarters

The physical facilities of the Purdue Center provide some 40,000 sq. ft. of floor space. The main building (40 by 100 ft.) has staff offices on the first floor. On the second floor, a complete library for the use of the Center's staff is surrounded by a dozen dormitory rooms for graduate students, each with individual climate control. These rooms are part of the environmental physiology facility.

A unique feature of the Center's research activity will be found in Wing B (40 by 95 ft.), where major construction may be erected within a chamber allowing complete climate control. The reaction of a normal family to varying man-made weather conditions will be carefully studied, to find clues to the proper conditions for humans.

To Study Environmental Control for Farm Animals

In Wing C (60 by 120 ft.) and Wing D (40 by 75 ft.), farm animals will be housed under partial environmental control. Studies of these animals are aimed at developing useful information regarding the effects of varying environmental conditions on efficiency of growth and reproduction.

Wing E (40 by 75 ft.) provides complete environmental control for farm animals and houses all operating equipment and machinery.

Wing F (60 by 120 ft.) provides space for a complete refrigeration and air conditioning laboratory for studies in chemical, mechanical, and electrical engineering problems in air conditioning and refrigeration.

The program at the Center will be under the administrative direction of a committee consisting of Prof. H. L. Solberg (chairman), Head of the School of Mechanical Engineering; Dean G. A. Hawkins, Schools of Engineering; Associate Director N. J. Volk of the Agricultural Experiment Station; and Prof. George A. Spen-

cer, Head of the School of Agricultural Engineering.

Prof. W. E. Fontaine of the School of Mechanical Engineering, and Dr. F. N. Andrews, professor of animal husbandry, will have the responsibility for the technical operation of the program and the selection and initiation of research programs, under the direction of the above committee. Liaison between the sponsors of the program and

Purdue university will be handled by Dr. Ralph A. Morgen, Research Director of the Purdue Research Foundation.

Project Several Studies For First 3 Years

Some of the projects which the technical scope of the research program for the first three years will embrace, include studies on noise, looking to a means of reducing noise intensity in refrigeration equipment and room air conditioners; measurement of the viscosity of refrigerants; and investigation of the flow of refrigerants through a variable orifice; a study of vapor diffusion and mass transfer between moist air and the surface below the dewpoint temperature; a study of a combined heat pump-solar energy cycle for year-round air conditioning.

In the field of applied research, in addition to the field studies and practical applica-

tions of data collected in the environmental physiology area of both humans and animals, there will be studies in food processing methods, refrigerated transportation, and basic research on industry codification problems.

"One of the principal functions of a university," President Hovde told the industry group at the luncheon meeting, "is the advancement of knowledge. The graduate school carries out this function in two ways:

"First, by training men to teach and advance knowledge.

"Secondly, by producing the knowledge itself, primarily through research."

Purdue doesn't normally ask for help from industry, Hovde said, except where a program is conceived and carried out for a particular industry. In such instances, since the benefits will accrue directly to the particular industry, the university feels justified in asking assistance.

"The air conditioning and re-

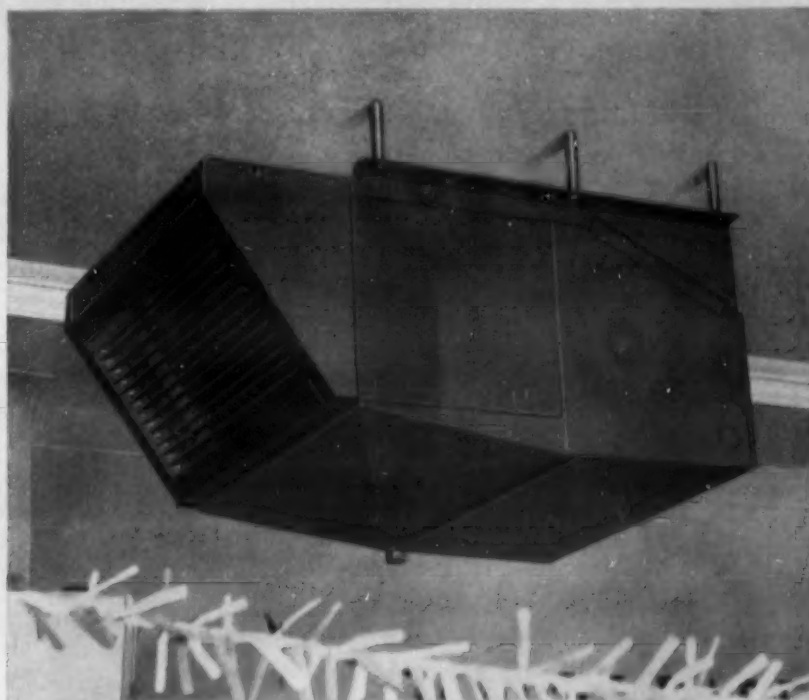
frigeration industry is young, vigorous, and in an era of expansion—it is ready for research activity," Prof. Fontaine declared.

The Purdue mechanical engineering school has already cooperated with the industry in many areas, and with expanded facilities can be of far greater assistance, Fontaine said, at the same time adding to the "Creativity" of the students who may become engaged in the industry's work.

Nature's cycle of reproduction is too slow to keep up with the growth in population of the world, declared Prof. Andrews, and climatic control can play a big part in the growth factors of such foods as milk, eggs, and meat. Furthermore, present day farming must become more efficient, and improvement in feed efficiency—in which climate control is a big factor—can cut costs to consumers and increase the farmer's profits.

New adaptable
air conditioner

BUILDS SALES FOR DEALERS



Only Worthington's FLEXI-COOL fits anywhere

FLEXI-COOL'S exclusive sectional construction is ringing up big air conditioning profits for scores of Worthington dealers. Here are just a few of the many comments received:

Elliot-Lewis, Phila., Pa.—"We sold a FLEXI-COOL to an automotive store owner who said, 'If you can hang it from the ceiling, I'll buy it.'"

Haried Co., E. Aurora, Ill.—"Our job was to air condition a smart restaurant without disturbing the layout or decor. FLEXI-COOL was the only air conditioner that could do the job."

Refrigeration of North Jersey, Dover, N. J.—"We made five sales recently. In every case, FLEXI-COOL'S sectional construction was the deciding factor."

Modern Heating & Plumbing, St. Louis, Mo.—"A local department store wanted a unit that could be installed in extremely small space, not interfere with traffic, yet function with maximum efficiency. FLEXI-COOL was the only answer—and they bought it."

Take advantage of these top selling features:

• FLEXI-COOL can be installed as a package or with blower, filter and coil remote from condensing unit.

- Horizontal installation on ceilings.
- Vertical installation in almost any out-of-the-way floor space, closet or basement.
- Choice of air or water-cooled system.
- Five Year Warranty on refrigeration cycle.
- FLEXI-COOL saves you inventory space.

Cash in on the big sales that FLEXI-COOL offers—a few exclusive Worthington franchise opportunities are still available! For complete information, send coupon today!

A.6.112

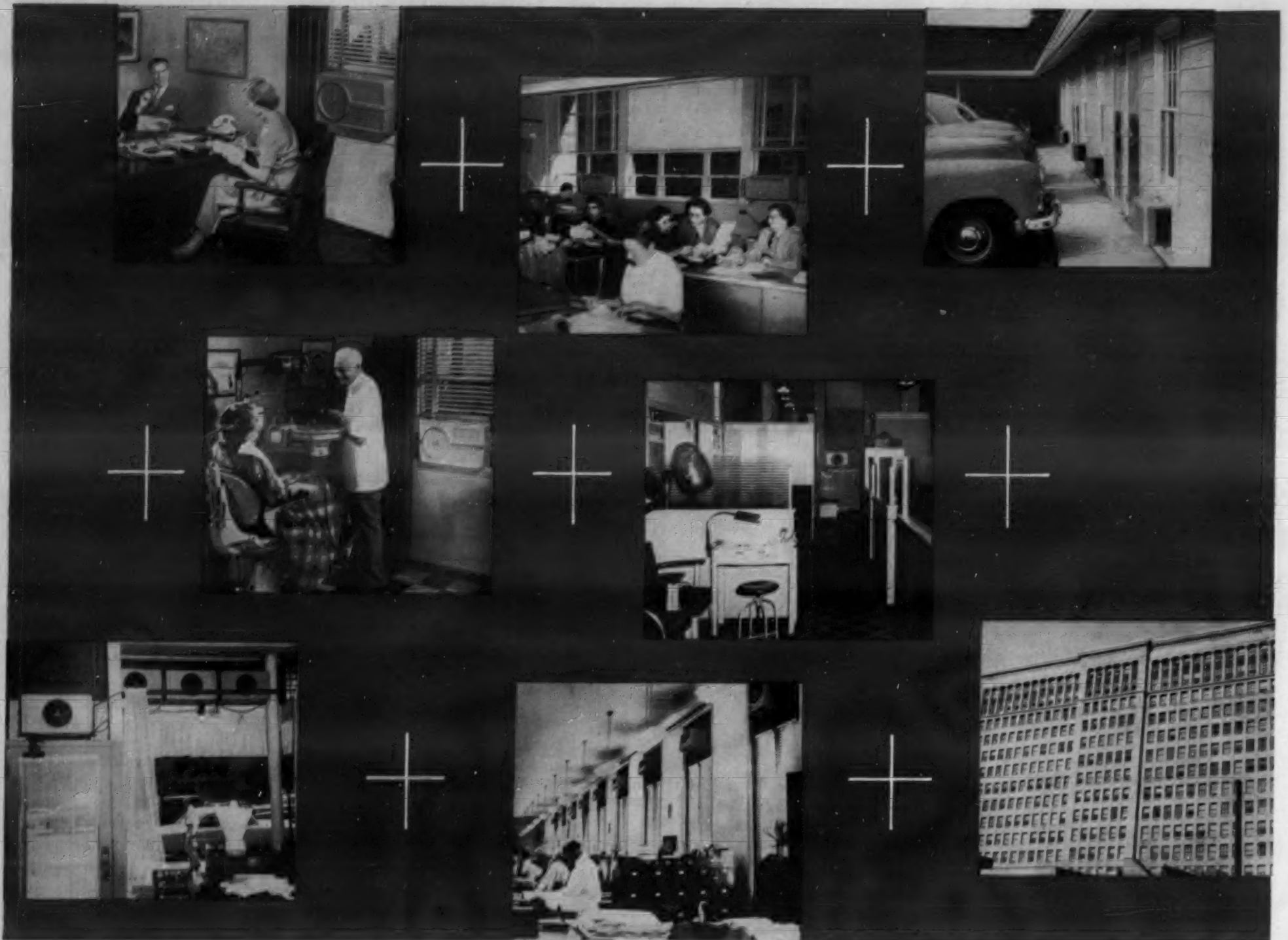
WORTHINGTON CORPORATION Air Conditioning & Refrigeration Div., Harrison, N. J. Please send me complete information on the FLEXI-COOL line. Check one: <input type="checkbox"/> I am <input type="checkbox"/> I am not interested in obtaining an exclusive Worthington franchise if available in my trading area. Store _____ Name _____ Address _____ City _____ Zone _____ State _____ (please print)		
--	--	--

WORTHINGTON



CLIMATE ENGINEERS TO BUSINESS, INDUSTRY AND THE HOME

For more information about products advertised on this page use Information Center, page 21.



Commercial installations add up to nearly 50% of your market for room air conditioners

AND COMMERCIAL CONTRACTOR-DEALERS ARE THE KEY TO THESE INSTALLATIONS

Over the last eight years some 2,131,600 room air conditioners have been installed commercially throughout the U. S. by commercial contractor-dealers. This represents nearly 50 per cent of all room air conditioners sold, and in view of the vast untapped prospective commercial market this is only the beginning.

The men who hold the key to this market are the commercial air conditioning contractor-dealers. (And they sell to the residential market, too!)

More commercial air conditioning contractors read AIR CONDITIONING & REFRIGERATION NEWS than any other publication in the field.

No doubt about it, the NEWS will carry your sales story to contractor-dealers who sell the bulk of the room air conditioners every year.

These are well established dealers who have sold and will continue to

sell to the apartment houses, motels, hospitals . . . to the barber and beauty shops . . . to the doctors' and dentists' offices . . . and to the banks, stores, and office buildings in their many communities.

Any way you add it up, AIR CONDITIONING & REFRIGERATION NEWS is your key to ever-increasing room air conditioner sales in an ever-expanding market—and at a surprisingly low cost to you. For a solid sales foundation tomorrow, advertise now in the NEWS! Do the first job where the first job is being done!

**AIR CONDITIONING
& REFRIGERATION**

The Newspaper of the Industry



NEWS

The Newspaper That Carries More Advertising By Far Than Any Other Publication In The Field.

450 West Fort Street, Detroit 26, Michigan
NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928-9, Robert M. Price.
CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer.
DETROIT, 450 West Fort St., WOodward 2-0924, J. R. Sullivan.
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon.

Carrier Units--

(Concluded from Page 1, Col. 5)

Wampler, chairman of the board, announced a program for greatly increased sales of room units by Carrier.

To More Than Double Room Unit Production

In outlining the new program, he disclosed that Carrier's production of room air conditioners would be more than doubled during the coming year, and he predicted that within three to five years its sales of such equipment would be at an annual rate of over 200,000 units.

Wampler spoke to a group of over 200 top executives of the nation's largest appliance and department stores invited here to preview the new line.

With great emphasis upon the cooperation of leading appliance merchants as a vital factor in volume sales of room air conditioners, Wampler declared:

"I promise you we will do whatever it takes to make it possible for you people to give us your all-out support, not only during the next few years, but always."

One of the basic elements of Carrier's new room air conditioner program is to be completely competitive, he said.

Although the program stresses the cooperation of ap-



LEFT: New Carrier "Super Crestline" room air conditioners are said to produce full-rated $\frac{3}{4}$ or 1-hp. cooling capacity while reducing electrical requirements. A flush grille features clear plastic "finger flip" controls.

RIGHT: Carrier's new "Console Weathermaker" can be built-in-wall as shown here or suspended from the window sill with top projecting 6 in. above sill. The unit is claimed to be the "thinnest" room air conditioner.



pliance dealers in boosting room unit volume, it is not likely that the company will adopt a split-distribution set-up with appliance distributors.

Carrier's new lines include three separate groups of models for in-the-window installation and the Console Weathermaker, which is available in $\frac{3}{4}$ and 1-hp. sizes.

3/4, 1, 1 1/2-Hp. Units In Window Line

Window models include the competitively-priced "Starline" in $\frac{3}{4}$, 1, and 1 1/2-hp. sizes, the deluxe "Crestline" in the same sizes, and the "Super Crestline" featuring the new $\frac{3}{4}$ and 1-hp. low-current units.

According to William C. Egan, room air conditioner manager for Carrier, other top features of the new models are:

1. A new high-style "flush" grille extending less than 2 in. into the room with a reversible design to regulate the direction of airflow. Adjustment of lateral deflection of air is also provided on the Crestline and Super Crestline models.

2. New "finger flip" clear plastic paddlewheel-type controls which project less than $\frac{1}{2}$ in. above the upper surface and "become nearly invisible at a distance of a few feet."

3. A new completely automatic control device known as "power cooling" providing modulated control of temperature and better regulation of humidity—available on the Crestline and Super Crestline models.

4. New automatic controls for ventilation and pumping out of exhaust air which start the fan as soon as the outside air damper setting is made.

The new models have been designated "Room Weathermakers" by Carrier to emphasize their quality relationship with the company's larger units.

Secret of the performance of the Super Crestlines is a new "constant balance" feature based on a unique self-governing design for the cooling cycle on which Carrier is now applying for patents, Egan said.

3/4-Hp. Unit Has Full Capacity Without Exceeding 7 1/2 Amps'

"In the new Carrier $\frac{3}{4}$ hp., full capacity is achieved without exceeding the 7 1/2-ampere rating by means of a cooling system which no longer calls for a rise in current demand when the unit is exposed to extreme high-temperature starting conditions," it was stated. "Thus the basic rated capacity of the unit need not be sacrificed to allow for unusual operation."

A product of three years of Carrier research and engineering, the new development affects both the design of the compressor and the cooling circuit, Egan said.

"Since the compressor inherently maintains a constant workload, the unit will continue to operate at excessive outside temperatures such as in desert areas, where conventional units

frequently cut off because of overload," the announcement stated.

'In Most Cases 3/4-Hp. Unit Can Be Plugged In With Other Appliances'

"The $\frac{3}{4}$ -hp. Carrier can in most cases be connected to ordinary household electrical circuits with other current consuming devices, provided the total requirements of all equipment plugged into the same branch wiring do not exceed 15 amperes. No special plug or outlet is required.

"The 1-hp. 115-volt model can be employed on a standard household circuit as long as it is reserved for the cooling unit alone, as was the case with regular $\frac{3}{4}$ -hp. models in the past. It draws 12 amps."

As in the case of the smaller Super Crestline, the constant balance feature enables it to use full power and produce full capacity at rated conditions.

Draftless air circulation is said to be insured by the reversible grille supplied on all models. When turned one way, the grille directs the cooled air toward the ceiling as it passes over the 45° angle vanes. When reversed, the air leaves the conditioner at a 15° angle, "and can thus be made to flow to the farthest corners of long narrow rooms."

Grilles of all units are a neutral shade. As a special decorative touch, the Crestline and Super Crestline have a bamboo center panel with the Carrier crest under clear plastic in a gold rectangle.

The "finger flip" controls may be set for cooling operation or fan only, are used to regulate ventilation, and on Crestline and Super Crestline to exhaust air from the room as well, and to select the temperature level maintained by the thermostat.

The Crestline and Super Crestline models, Carrier claims, "are the first room units ever offered with completely automatic control of all functions."

"The new controlling device operates through a two-step thermostat which 'shifts gears' 41 1/2 in. long, and 23 1/2 in. high.

electrically, reducing fan speed when the room temperature approaches its desired level.

"This increases dehumidifying action, lowering humidity, helping to maintain constant temperature and preventing frequent 'on-off' cycling."

The Console Weathermaker is claimed to be "the thinnest room air conditioner ever built."

Console Is Built-In or Suspended from Sill

It can be built into the wall, or it can be suspended from the window sill extending only 6 in. upward into the glass area, and permitting the window to be closed behind it when not in use.

The Console "is designed for easy inclusion of a heating coil replacing a radiator and connected to the same steam or hot water piping," it was said.

"When applied in this fashion it will provide summer cooling and dehumidification, winter heating, and year-round circulation and filtered air ventilation.

"Units can be installed one room at a time without affecting the rest of the heating system, thus permitting gradual conversion to complete air conditioning of a home or building equipped with 'wet heat.'"

"The unit measures only 12 1/8 in. from front to back and half of this depth can be recessed into the wall on built-in installations.

"The outside air duct requires an opening through the wall or window only 5 1/2 in. high and 24 7/8 in. long. When built into the wall in masonry construction, this usually means removal of only two courses of brick.

"In window installations, it is provided with a special seal for the opening which permits the window to be fully closed behind the air duct when not in use."

Efficient control of air discharge in all directions is provided through adjustable air grilles, the company said. Return air is admitted to the underside of the unit. An outside air damper permits filtered ventilation.

Dimensions are 12 1/8 in. deep, 41 1/2 in. long, and 23 1/2 in. high.

PARTS ORDERS for UNIVERSAL

- AIR CONDITIONERS
- REFRIGERATORS • FREEZERS and
- BEVERAGE COOLERS

Including Alsco; Ambassador; Armad; Artkraft; Coolaire; Majestic; Philharmonic; Supremacy; U. S. Capitolaire.

Should now be sent to:
UNIVERSAL DIVISION
THE HORTON COMPANY
915 Liberty Ave., Pittsburgh 22, Pa.

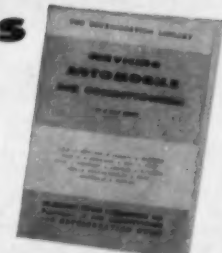
JUST PUBLISHED!—NEW! AUTHORITATIVE!
10-DAY FREE TRIAL!

Auto Air Conditioning Service Information at Your Finger Tips

152 pages—detailed diagrams—complete service data. All 17 nationally-known auto air conditioning units described in detail. Manufacturer-recommended servicing tips covered fully. Increase your income with this handy manual of service information on these famous names:

A.R.A. • ARTIC-KAR • FRIGIKAR • FRIGIQUIP
MARK IV • MOBIL-AIRE • NOVI • PIVOT
BUICK • CHEVROLET • CHRYSLER • PLYMOUTH
FORD • LINCOLN-MERCURY • NASH • OLDSMOBILE
PONTIAC.

This money-making manual can be yours simply by filling out the coupon below. If not completely satisfied, return your copy within 10 days and your money will be refunded.



Air Conditioning & Refrigeration News

450 WEST FORT STREET
DETROIT 26, MICHIGAN

Please send me my copy of "Servicing Automobile Air Conditioners" at \$2.00 each.

- ☐ My check is enclosed NAME.....
- ☐ Please bill me COMPANY.....
- ☐ Please bill my company STREET.....
- CITY.....ZONE.....STATE.....

"Manual sent postpaid if remittance enclosed." 9-34-56

SEND FOR
YOUR MANUAL
TODAY!

New ANEMOTHERM AIR METER gives you

Air Velocity
Air Temperature
Static Pressure

with

P U S H B U T T O N
ease



The new model 60 Anemotherm Air Meter helps you balance heating, ventilating and air conditioning systems the modern pushbutton way. It puts air velocity, air temperature and static pressure at your fingertips... pays for itself through time saved on only one major job. • Write for Bulletin 55 giving all essential data.

AC 13388

ANEMOSTAT CORPORATION OF AMERICA
10 EAST 39th STREET, NEW YORK 16, N. Y.

AIR CONDITIONING & REFRIGERATION NEWS

REPRINTS

The following articles have appeared recently in Air Conditioning & Refrigeration News, and are now available in reprint form. Supply of some reprints is limited. The order coupon below can also be used to obtain "selected" reprints not listed by giving title, page, and issue date.

BOOKLET FORM

A) "AIR CONDITIONING THE HOME"

A comprehensive study on year 'round residential air conditioning—seven sections including: why people buy it, market conditions, how to sell it, estimating costs for various types of installation, FHA requirements, plus much more valuable information. 9" x 12" in size, finely printed and profusely illustrated.

Only \$1.00 each.

B) "COMMERCIAL PACKAGED AIR CONDITIONERS AT WORK"

70 pages, 9" x 12"—the first comprehensive book covering this important segment of the air conditioning industry. Includes market, survey information, commercial, institutional and industrial applications, and a complete explanation of the fast growing segment of the commercial market—packaged heat pumps.

Only \$1.00 each.

C) "SHORT, SHORT COURSE IN AIR CONDITIONING FUNDAMENTALS"

A brand new booklet just off the press dealing with air conditioning in basic, understandable terms. Five sections, including Air, Moisture; How to distribute air; Trouble-shooting air; Ventilation, Filtration; Sound, Comfort.

Only 25¢ each.

D) "PRODUCT KNOWLEDGE, PROTECTIVE MAINTENANCE, TROUBLE-SHOOTING, ADJUSTMENT, REPAIR OF ELECTRIC MOTORS"

A discussion by T. N. Schierloh, service technical manager of General Motors' Delco Products Div., on servicing refrigeration and air conditioning motors.

Only 40¢ each.

E) "COMPARISON OF REFRIGERANTS 12-22"

Paul Reed presents a complete digest and factual comparison of the two refrigerants 12 and 22. Twelve fact-filled pages to help prevent troubles that have been and are now being experienced in the field.

Only 75¢ each; 50 or more copies, 50¢ each.

Everyone concerned with air conditioning should read the above books and keep them handy for reference purposes. Order your copies now.

PAMPHLET FORM

- | | |
|--|---|
| 1) Humidity Control In Home Cooling | 17) Memphis Residential Air Conditioning, 1954 |
| 2) Distributor Tells How He Got Dealers to Sell Heat Pumps—Right Now | 18) Residential Air Conditioning In Wichita |
| 3) Experts Eye Home Air Conditioning | 19) Residential Air Conditioning In Wilmington, 1954 |
| 4) Packaged Units Chosen for Converting Warehouse to Office Building | 20) Residential Air Conditioning In Atlanta, 1954 |
| 5) Proper Refrigeration Zone Use Adds to Food Life | 21) Residential Air Conditioning In Ft. Worth, 1954 |
| 6) News Survey Shows Trends In Residential Air Conditioning | 22) Residential Air Conditioning In Cincinnati, 1954 |
| 7) Psychological Study Shows Hidden Benefits of Home Conditioning | 23) Detroit Commercial Refrigeration Sales |
| 8) How Ceiling Diffusers Can Be Used In Residential Systems | 24) New Wichita Survey Shows Residential Air Conditioning Soars |
| 9) '55 Home Unit Sales Up 34% In N. Y. Area | 25) Fort Worth Survey Reveals New High In Home Air Conditioning Installations |
| 10) Chilled Water Central Air Conditioning Installed for \$1,000-\$1,400; Utilizes Wet Heating System, Needs No Duct | 26) Memphis Residential Air Conditioning In 1955 |
| 11) Detroit Air Conditioning Sales at New High | 27) What's the Market for Systems 100 Tons and Up? |
| 12) Survey Shows Equipment In Food Stores | 28) Detroit Air Conditioning Sales in 1955 |
| 13) Survey Points Up Replacement Market for Restaurant Refrigeration Equipment | 29) Atlanta Residential Air Conditioning In 1955 |
| 14) New Minneapolis Survey Shows Home Installations 370% Higher Than '54 | 30) Balancing Air Distribution for Year-Round Conditioning |
| 15) How to Convince Home Buyer Air Conditioning Adds More Value Than Cost of Equipment | 31) Heat Pump Prospects |
| 16) Minneapolis Residential Air Conditioning In 1954 | 32) Air Conditioning Conference Spotlights the Air-Cooled Condenser |
| | 33) Trends in Home Air Conditioning 1956-1965 |
| | 34) Tips on Blower Installations |
| | 35) Builder Called 'Prime Medium' In Home Conditioning Sales |

(Quantity rates—100 or more copies—available upon request.)
Single copies, 20¢ each.

Air Conditioning & Refrigeration News 450 W. Fort St., Detroit, Mich.

Please send me the following reprints (circle corresponding letter or number which precedes listing above):

Quantity					
A.....	1.....	7.....	13.....	19.....	25.....
B.....	2.....	8.....	14.....	20.....	26.....
C.....	3.....	9.....	15.....	21.....	27.....
D.....	4.....	10.....	16.....	22.....	28.....
E.....	5.....	11.....	17.....	23.....	29.....
F.....	6.....	12.....	18.....	24.....	30.....

☐ Bill me ☐ Bill my company ☐ Payment enclosed

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

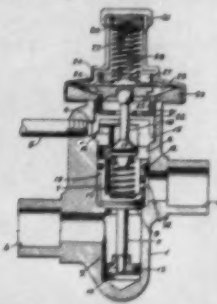
Reprints sent post-paid if payment enclosed.
(In Continental U. S. and Canada only)

9-24-56

PATENTS

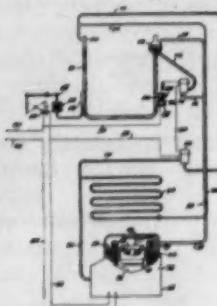
Week of May 15

2,745,254. FLUID FLOW CONTROLLING DEVICE. Hyman Malkoff, Levittown, Pa., assignor to Kramer Trenton Co., Trenton, N. J.



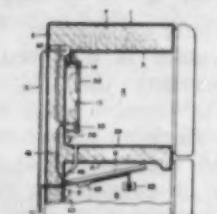
4. A refrigerating system including a compressor, condenser, evaporator and reevaporator all operatively interconnected, together with a hot gas conduit connecting compressor discharge with evaporator, and a valve device positioned between the evaporator and the reevaporator and compressor, said device comprising a casing, an inlet thereto connected with the outlet of the evaporator, an outlet from the casing connected to the inlet of the compressor, a second outlet from the casing connected to the inlet of the reevaporator, and means within the casing for controlling refrigerant flow therethrough from the inlet to both outlets or only to the last named outlet according to whether the refrigerating system is operating on a refrigerating cycle in which the flow is mainly in gaseous phase or a defrosting cycle in which the flow is mainly in liquid phase.

2,745,255. DEFROSTING REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to American Motors Corp.



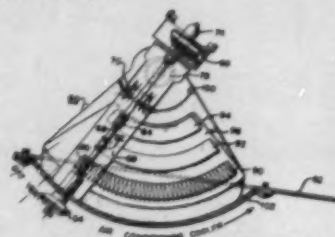
1. Refrigerating apparatus comprising a system having a motor-compressor unit, a refrigerant condenser connected to said unit, a refrigerant evaporator having a liquid refrigerant accumulator at its outlet, a vapor return conduit having one end connected to said accumulator above the level of liquid refrigerant therein and the other end thereof connected to said unit adjacent the motor thereof, a supply conduit connected on one end thereof to the condenser and on the other end to said evaporator, a valve controlled by-pass conduit having one end thereof connected to the outlet of said compressor and the other end thereof being connected to the inlet of said evaporator and a valve controlled dumping conduit having one end thereof connected to said accumulator below the level of liquid refrigerant therein and the other end thereof of being connected to said vapor return conduit.

2,745,256. EVAPORATOR OF HIGH THERMAL MASS. Frank A. Schumacher, Louisville, Ky., assignor to General Electric Co., a corporation of New York.



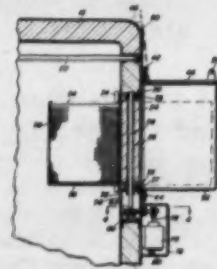
3. A refrigerator including a storage compartment and a freezer compartment, refrigerant evaporator means in each of said compartments for maintaining the desired temperatures therein, electrically operated refrigerant condensing means for periodically supplying liquid refrigerant to both of said evaporator means, means responsive to the temperature of the evaporator in said storage compartment controlling the operation of said condensing means and adapted to energize said condensing means only after said storage compartment evaporator has warmed to defrosting temperature, said freezer compartment evaporator comprising a flat plate including a plurality of substantially horizontal passages of refrigerant tubing and water containing receptacles mounted on said plate between adjacent tubing passages for increasing the thermal mass of said evaporator.

2,745,257. REFRIGERATING APPARATUS. James W. Jacobs, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



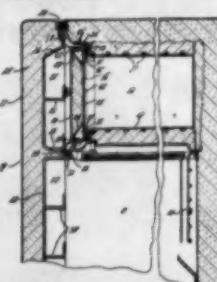
8. In a single operative refrigerating system, a compressor, a condenser, an evaporator, refrigerant flow connections between said compressor, condenser and evaporator, a prime mover, power transmitting means between said prime mover and said compressor including a clutch, blower means for circulating air to be conditioned in thermal exchange relationship with said evaporator, duct means for conveying fresh air into thermal exchange relationship with said evaporator, a fresh air damper in said duct means, a master control element, means responsive to rotation of said master control element for varying the speed of said blower means, means responsive to oscillation of said master control element in one plane for controlling said fresh air damper, means responsive to oscillation of said master control element in another plane for controlling the operation of said clutch, said clutch control means including a thermostat arranged to respond to the refrigeration requirements for automatically operating said clutch, and means responsive to movement of said control means for varying the temperature at which said temperature responsive means operate said clutch.

2,745,258. AUTOMATIC THAWING DEVICE. Milton M. Gottlieb, Beverly Hills, Calif., assignor to thirty-three and one-third per cent to Eugene W. Smith, Arcadia, and thirty-three and one-third per cent to Robert Hayes, Los Angeles, Calif.



1. A thawing device comprising means for retaining material in a cold area, and means for raising the temperature of the material, said retaining means including a receptacle movably mounted on a wall separating a cold area from a warm area, said receptacle moving from a position within the cold area to a position in the warm area at a preset time.

2,745,259. REFRIGERATOR WITH MEANS TO COOL SHELVES ADJACENT AN INSULATED FREEZING COMPARTMENT. Orson V. Saunders, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware.

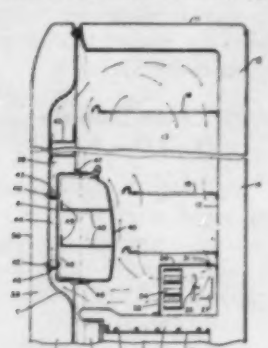


1. A refrigerator including a cabinet having an open front unfrozen food storage compartment and a front access opening frozen food storage compartment therein insulated from said unfrozen food compartment, a refrigerating system associated with said cabinet including a first evaporator for cooling air in said unfrozen food compartment, a common door extending across the access opening of both of said compartments, an inner door between said common door and said frozen food compartment for closing the access opening thereof, said common door having food supporting shelf means on its inner face located opposite said inner door, means for transferring heat from food products placed on said shelf means to said second evaporator for refrigerating same, said last named means including valved air passageways extending through said inner door, and means for maintaining said valved passageways open when the common door is shut and for closing said passageways automatically in response to opening said common door.

2,745,260. HYDRATOR ON REFRIGERATOR CABINET DOOR. Orson V. Saunders, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.

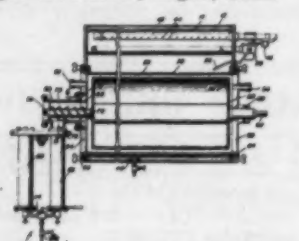
In a refrigerator, a cabinet having

a food storage chamber therein provided with a front opening, a door normally closing said chamber opening, a refrigerating system associated with said cabinet including an evaporator for cooling air in said chamber, a hydrator receptacle carried by said



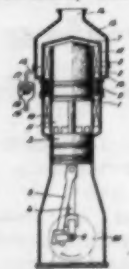
door, said receptacle comprising a back wall stationarily mounted upon said door in spaced relation to the inner face thereof forming a flue therebetween and a cover member pivotally secured to the lower portion of said back wall for vertical swinging movement relative thereto, means for circulating air over said evaporator to cool and cause the cooled air to flow through said flue for carrying away warm air as it forms in the space between said receptacle back wall and the inner face of said door, said cover member of said hydrator receptacle having partitioning means thereon dividing the interior of the receptacle into compartments, one of said partitioning means forming a support within said receptacle above the bottom thereof for receiving and supporting food products therein, and said receptacle cover member together with food products therein being swingable downwardly relative to its stationary back wall into a horizontal plane, when said door is opened, to provide access to the food products at substantially a waist high level.

2,745,261. CONTINUOUS FREEZER. Casper W. Merrill, Logan, Utah.



1. A continuous freezer comprising a housing, a refrigerant casing in said housing, a mix chamber in said refrigerant casing, a mixing drum in said mix chamber with said mix chamber having an inlet and an outlet, said refrigerant casing including an apertured baffle plate, a vapor chamber above said refrigerant casing, liquid refrigerant precooling coils in said vapor chamber, and a vapor suction line in said vapor chamber.

2,745,262. REFRIGERATOR GAS LIQUEFIER. Jacob Willem Laurens Kohler, Eindhoven, Netherlands, assignor to Hartford National Bank and Trust Co., Hartford, Conn., a trustee.



1. A refrigerator comprising a freezer; a regenerator; a cooler and two spaces, containing a working medium of invariable chemical composition which traverses a closed thermodynamic cycle while being in the same physical state through said freezer, regenerator and cooler; one space having a relatively lower temperature than the other space; the working medium in each of said spaces varying continuously in volume with a substantially constant relative phase difference; a gaseous medium surrounding said freezer being adapted to condense at least at -150° C. on substantially all of the wall of said freezer; and a screen having heat insulation properties extending in a space confronting manner for substantially the whole length of said freezer thereby forming an interspace for said gaseous medium to be condensed therein.

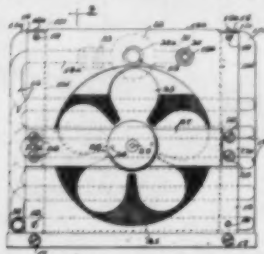
2,745,263. PORTABLE COOLING UNIT. Alfredo Mendez, Chicago, Ill.

1. A portable cooling unit for trucks, truck trailers, house trailers, kitchens, dwelling and storage rooms, etc., comprising in combination a casing-like frame comprising a rectangular panel-like base having upstanding front, rear and end flanges, a pair of upstanding, laterally spaced and substantially channel form end wall units for said

(Continued on next page)

PATENTS

(Continued from preceding page)
frame supported between said base flanges and providing longitudinally

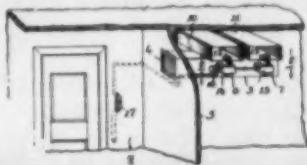


coextensive front and rear flanges, the front flanges of said end wall units being substantially wider than the

said rear flanges, an upstanding rear wall for said cooling unit coextensive in height with said end wall units and providing a central fan receiving opening, said unit rear wall supported by said base member between the rear flange thereof and the lower ends of the rear flanges of said end wall units, fastening means securing said unit rear wall to said rear end wall unit and base member flanges, other fastening means securing said rear wall to said rear end unit flanges, a front panel element secured to and connecting the front flanges of the end wall units adjacent the top thereof whereby to cooperate with the latter and the front flange of said base unit to provide a rectangular cold air discharge opening at the front of said unit and occupying the major portion of said unit front in alignment with the fan-receiving opening of said unit rear wall, a cooling coil extending between said end wall units and having an inlet at one end and an outlet at the other end, said coil supported by said end wall

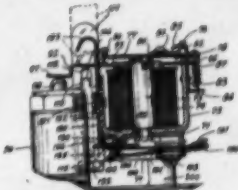
units between said flanges to be protected thereby, there being an expansion valve in said coil adjacent the inlet thereof and having adjustment means operable through a hole in said unit rear wall, a removable top closure for said unit, said front panel having a substantially coextensive integral flange at its upper edge cooperating with the upper ends of said end wall units to support said closure, a forwardly turned keeper flange at the top edge of said rear wall and overlying the rear edge of said closure, said end wall units having integral horizontal flange-connecting top portions, closure fasteners engaging the latter, a motor-carried fan secured to said rear end member flanges and disposed opposite said fan-receiving opening therein, and said coil outlet lying behind the widened front flange of one of said end wall units to be protected thereby.

2,745,802. AUTOMATIC AIR REGULATING CONTROL DEVICE. William L. Hand, Hammond, Ind. Application March 16, 1955, Serial No. 494,773. 11 Claims. (Cl. 236-13.)



5. An automatic air control system comprising a warm air feeder duct, a cold air feeder duct, a branch duct communicating with each of said feeder ducts through separable interceptor units, each of said interceptor units including a tube and a set of rings movable into and retractable from one of said feeder ducts, said rings being curved inwardly to deflect and turn air from said feeder ducts through said tubes, and a thermostatically controlled motor for automatically moving the tube and rings of each interceptor unit simultaneously in opposite directions transversely relative to said feeder ducts upon variations between the thermostat setting and the temperature of room in which the thermostat is located to increase the diversion of air from one of said ducts and proportionally decrease the diversion of air from said other duct to maintain the total air diverted from said feeder ducts at a constant volume and to regulate the air temperature in the room in which the thermostat is located.

2,745,830. CONTROL MEANS FOR SOLENOID ACTUATING DEVICE. Claude M. Garner, Clayton, Mo., assignor to Missouri Automation Control Corp., St. Louis, Mo., a corporation of Missouri. Original application June 19, 1946, Serial No. 677,530. Divided and this application March 15, 1955, Serial No. 276,782. 8 Claims. (Cl. 251-130.)



1. A valve operating means including a coil, an armature wholly situated exteriorly of the coil and movable upon energization of the coil, an operating member adapted to be removed by the armature, manual means to operate said operating member including a first member movable from a released position into position to be engaged by the armature and returned to released position upon energization of the coil, a second member engageable with the operating member to move the same, means connecting the two members so that when the first member is moved to its position to be engaged by the armature the second member will be moved to actuate the operating member, and means releasably holding the manual means in said position, the coil upon energization being adapted to actuate the armature to engage the first member, return the same to its released position, and to release the second member.

2,745,841. BEVERAGE DISPENSER. William H. Jacobs, Newton, Mass. Application March 16, 1955, Serial No. 342,677. 11 Claims. (Cl. 259-36.)

1. A liquid dispenser comprising: a

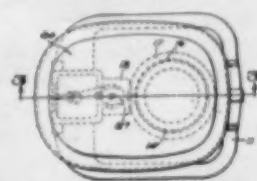
CHIEF REFRIGERATION ENGINEER

Unusual opportunity for a well grounded man who wants and can take responsibilities.

SALARY OPEN

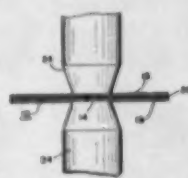
Location New York City—Our organization knows of this ad. Write in confidence to Box 1000. Realservice Advt. Agency, 110 West 34 St., N.Y.C.

storage tank for the liquid; a cylindrical refrigerating element mounted in said tank and spaced from the walls thereof; a pump having an intake port communicating with said tank and a



discharge port; a discharge conduit leading from said discharge port; means for driving said pump; and a standpipe leading upward into said tank, having its lower end connected to said conduit, said standpipe having an orifice above the level of liquid in the tank, and an orifice below said level, said latter orifice being adapted to discharge substantially tangentially to the walls of said refrigerating element.

2,745,938. REFRIGERATING APPARATUS. Leland H. Grenall, Oakwood, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Jan. 19, 1953, Serial No. 333,057. 1 Claim. (Cl. 219-15.)



The method of manufacturing plate type receptacles which comprises placing two complementary plates together with a fusible bonding material between the two plates, heating the assembly to fuse the bonding material, allowing the plates to cool, and thereafter resistance brazing the area adjacent the edge portion of said plates to seal the edges so as to prevent the formation of frost blisters.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

FIFTEEN YEARS in the industry, five years' valuable experience in designing, manufacturing and sales to OEM accounts component parts strainers, driers, accumulators, capillary assemblies, flexible metal hose etc. Know copper spinning and stamping. Serve in any capacity to prove capabilities. Available immediately. All references. Write P.O. BOX 364, Charlotte, N. C.

SALES REPRESENTATIVE available, age 34, engineering background, 9 years' experience in engineering and sales in the air conditioning field. Experience includes establishing and promoting volume distribution of various air conditioning products. Proven sales record. Located in Baltimore, Maryland. BOX A5639, Air Conditioning & Refrigeration News.

PRODUCT SERVICE manager—15 years' experience in refrigeration and air conditioning industry. Technical college graduate with engineering and practical background. Executive experience in service management in co-operation with sales management to further the sales, manufacture, and distribution of refrigerated products. Southeastern location preferred. Write Box A5640, Air Conditioning & Refrigeration News.

HERMETIC UNIT specialist: 36 years old, married, willing to travel. Owned and operated hermetic unit rebuilding plant for 10 years. Plus 8 years of field experience. Good knowledge of all types of relays and electrical mechanisms. Can furnish good references. Licensed and bonded. Seeking position as service supervisor, field engineer or trouble shooter with reliable manufacturer or distributor. BOX A5643, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

LARGE REFRIGERATION wholesaler has openings for outside salesmen and counter-men at several branches. Especially good opportunity for man with selling ability who desires change from contracting to wholesale. Write, giving complete information and salary desired. W. A. CASE & SON MFG. CO., attention: Mr. E. H. Brown, 33 Main Street, Buffalo, New York.

MANUFACTURERS REPRESENTATIVES in all territories for a new air conditioning program just being introduced. If you have the ability to handle a real profit making activity, write giving territory, lines carried and air conditioning experience. M. A. Myers, RAYMOND ROSEN EQUIPMENT CO., 51st & Parkside Ave., Philadelphia 31, Pa.

JUNIOR ENGINEER—Air conditioning design and layout prominent Los Angeles contractor. Good salary plus heavy overtime. Free sickness, hospital and accident benefits. Profit-sharing plan. Give complete resume, experience, salary, etc. first letter. Interview arranged. Reply to BOX A5631, Air Conditioning & Refrigeration News.

WANTED: EXPERIENCED, commercial refrigeration servicemen in Detroit area. Only experienced need apply. Top scale. Replies held in confidence. State age and experience. BOX A5634, Air Conditioning & Refrigeration News.

REFRIGERATION WHOLESALE parts salesman wishing to relocate. Position now open in Southwest. Knowledge of heating and air conditioning controls

an asset. Minimum of three years experience. Give all particulars in first letter. BOX A5635, Air Conditioning & Refrigeration News.

AIR CONDITIONING and refrigeration equipment wholesaler (Southern California) has opening for experienced application and sales engineer. Financial interest available for man capable of managing this fast growing leader in the field. Give complete background data in your first letter. Confidence respected. BOX A5641, Air Conditioning & Refrigeration News.

LEADING MANUFACTURER of air conditioning equipment has opening in service department for renewal parts supervisor to assume responsibility for adequate parts stocking and to supervise renewal parts order handling. Previous experience in similar work essential. Location, Middle South. Send experience resume to BOX A5645, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

HAVE FIVE used Carrier ice machine sections, (3) with storage bins. Will trade for used Scotsman Flakers or Cubers. Advise model and serial numbers to WATERS EQUIPMENT CO., INC., Tampa, Florida. 105 W. Hillsboro Ave.

EQUIPMENT FOR SALE

SERVICEMEN'S THERMOMETERS: Mercury filled with pocket cases, range -60° to plus 160° F. Mfg. by Taylor and G. M. Price \$10.50 per dozen postpaid. H. L. BOGESS & SONS, Liberty, Missouri, P. O. Box 137.

THOUSANDS OF air conditioners are now equipped with Kesco automatic condensate water disposal pumps available at your local wholesalers in 10 and 20 foot heads 110 or 220 volts only 9" high, water inlet 5 inches from floor. Wholesalers write to KESCO PRODUCTS, P. O. Box 84, Springfield Gardens 13, New York.

BUSINESS OPPORTUNITIES
AGENTS AND DISTRIBUTORS wanted in South and Southwest for complete line of washable permanent air filters. Nationally known manufacturer has aggressive advertising and promotion program. Territories will be assigned in October. Write full details to BOX A5638, Air Conditioning & Refrigeration News.

PARTNERSHIP DESIRED: New York area. Contractor or supply house. Young man, 15 years' heavy background refrigeration, air conditioning servicing, installing, designing, testing, manufacturing refrigerated open cases; purchasing; load estimating; motor, compressor overhauling; cost control; service managing. Invest \$25,000.00, services, in profitable operation. Must stand investigation. BOX A5642, Air Conditioning & Refrigeration News.

FOR SALE: Well established commercial refrigeration, air conditioning and sheet metal contracting business. Located in California. Complete shop equipment and rolling stock, good lease, top franchises. Excellent opportunity for aggressive persons. Owners have other interests. BOX A5644, Air Conditioning & Refrigeration News.

MISCELLANEOUS

CONTRACT MANUFACTURER will build to your brand name. Twenty-five years experience manufacturing 2 to 15 ton air conditioners, water coolers, liquid chillers, low temperature units, refrigeration specialties and cabinets. Will adhere to schedules. Can design. Present your needs. Write BOX A5609.

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.

Government Contracts

GENERAL SERVICES ADMINISTRATION

NOTICE TO SMALL FIRMS

Shelby Air Force Depot, Wilkins Air Force Station, Shelby, Ohio, Attn.: Directorate Procurement and Production.

INSTALL 80 TONS OF AIR CONDITIONING with the necessary cooling and reheat coils, fans, ductwork and plenum chamber, and equipment room with a packaged water saver device in strict accordance with description of work technical provisions and drawing—Job—IFB 33-602-57-18B—Bid Opening 22 Oct. 56.

AIR FORCE

Base Contracting Office, Offutt Air Force Base, Nebr.
AIR CONDITIONING FOR OFFICERS' FIELD MESS BUILDING. Offutt Air Force Base, Nebr.—Job—IFB 25-600-57-27—Bid Opening 24 Sept. 56.

Procurement and Contracting Office, Ardmore Air Force Base, Okla.
AIR CONDITIONING OF TWO BLDGS. by Installation of Evaporative condensers, compressors, Air Handling units and controls. Ardmore Air Force Base, Okla.—Job—IFB 34-610-57-3—Bid Opening 24 Sept. 56.

Base Procurement Office, Eglin Air Force Base, Fla.
The following items are procured under IFB 08-603-57-117B—Bid Opening 4 Oct. 56.

REFRIGERATOR, MECHANICAL, HOUSEHOLD, 8 cu. ft., Westinghouse Model HJ-80 or General Electric Model LH-81N or equal with door hinged on left, 48 ea.; with **DOOR HINGED ON RIGHT,** 48 ea.—**REFRIGERATOR, MECHANICAL, HOUSEHOLD,** 12 cu. ft., Westinghouse Model DF J-122 or General Electric Model LH-12N or equal, with door hinged on right—91 ea.—**WITH DOOR HINGED ON LEFT,** 92 ea.

Air Force Contracting Office, 3800 AB Wing, Maxwell Air Force Base, Ala.
MODIFICATION AND AIR CONDITIONING ACADEMIC CLASSROOM 171-153, Building 505, Maxwell Air Force Base, Ala.—Job—IFB 01-600-57-43—Bid Opening 16 Oct. 56.

INSTALLATION OF AIR CONDITIONING SYSTEM in Building 741, Maxwell Air Force Base, Ala.—Job—IFB 01-600-57-42—Bid Opening 16 Oct. 56.

Servicemen, Salesmen, Dealers!

NOW

...AIR CONDITIONING SIMPLIFIED
in a new, fact-filled booklet

'Short, Short' Course in Air Conditioning Fundamentals

... Everything you need to know about air conditioning and how it works ... D. C. Schaffer's condensed course in comfort air conditioning—a complete summary for servicemen, salesmen, dealers and others who are not engineers.

... Includes—The Nature of Air, Moisture • Psychrometric Chart • Fans • Air Flow Factors • Grilles • Outlets • Dampers • Distribution • Ventilation • Filtration • Sound Control • Comfort.

... You'll want your personal copy of 'Short, Short' Course in Air Conditioning Fundamentals for ready reference. A limited supply is available at only 25¢ per copy (quantity prices upon request). ... Order your copy now!

Write for 'Short, Short' Course in Air Conditioning Fundamentals—Business News Publishing Co., 450 W. Fort St., Detroit 26, Mich., or use the handy coupon below.

MAIL THIS
COUPON
TODAY!

Business News Publishing Co.
450 W. Fort St., Detroit 26, Mich.

9-24-56

Please send me copies of 'Short, Short' Course in Air Conditioning Fundamentals @ 25¢ each.

☐ Check Enclosed ☐ Send Bill

Name

Company

Street

City Zone State

Booklet sent post-paid if remittance enclosed.

Refrigeration Statistics for 1954--

(Concluded from Page 1, Col. 2)

sults when some companies use as materials the products of other companies in the industry.

The bureau claims it is the best value measure available for comparing the relative economic importance of manufacturing among industries and geographical areas.

Refrigeration Machinery Industry Defined

The refrigeration machinery industry is defined as manufacturing establishments engaged in the manufacture of mechanical and absorption refrigerators for commercial, industrial, and household use; refrigeration machinery; ice-making machinery and equipment; refrigerated showcases and cabinets; and complete air conditioning units for domestic, commercial, and industrial use.

In commenting on the data published, the bureau said that total cost of materials and total value of shipments of the industry have not been published due to the extensive duplication contained in these data. This duplication results from intra-industry shipments of certain products by some establishments for use as materials by others.

"For this reason," it stated, "the 'primary product specialization ratio,' a measure of the extent to which plants classified in an industry 'specialize' in making the products regarded as primary to the industry, could not be computed precisely.

"The ratio, however, is between 85 and 100, with the principal secondary products shipped by establishments classified in this industry consisting of electric appliances, pumps and compressors, aircraft parts, and ordnance.

"Since this duplication is also contained in the value of refrigeration machinery shipped by all producers, the total of such shipments is not shown in Table 3.

While Table 3 compares values of shipments between 1954 and 1947, a comparison is possible between some items listed and figures gathered by the Census Bureau for 1953. The 1953 figures were published by the News in its Aug. 2, 1954 issue.

The value of shipments for compressors and compressor units rose from \$121,054,000 in 1953 to \$162,991,000 in 1954. While the number of compressors and compressor units for all refrigerants except ammonia and all uses except household refrigerators in sizes of 7½ hp. and below dropped from 2,370,538 in 1953 to 2,195,780 in 1954, their value rose from \$102,901,000 to \$106,762,000.

Value of shipments of condensing units rose from \$74,013,000 in 1953 to \$85,240,000 in 1954. Gains in shipments of water-cooled hermetic units and larger size water-cooled open units plus larger size ammonia units accounted for the increase. Shipments of air-cooled units of all types were off in 1954.

Shipments of window-type air conditioners in 1954 rose 18% over those of 1953, moving from 1,017,699 to 1,344,653

units in 1953 and 104,107 in 1954.

Evaporative condenser shipments rose from 5,508 in 1953 to 5,674 in 1954. Refrigerated unit cooler shipments slipped slightly from 89,532 units in 1953 to 88,630 in 1954.

Philco 'Talking'--

(Concluded from Page 1, Col. 4) appropriate to do so."

In New York City, Victor Emanuel, Avco president and chairman, said it is "absolutely false that Philco has acquired the assets and name of the Bendix Home Appliance Div. or that any negotiations are under way other than those for the manufacture of Philco laundry equipment in the Bendix plant at Nashville."

Rumors have been circulating in the appliance industry for some time that Avco is interested in disposing of its Crosley and Bendix divisions.

Room Unit Sales 1,500,000 for '56--

(Concluded from Page 1, Col. 4)

inventories at the retail level on Aug. 31, 1955, were around \$125,000.

"We feel that the retail inventory picture remains fairly constant, and that present inventories at the dealer level are probably not much beyond that figure," said George Jones, Jr., ARI managing director.

"Furthermore, the manufacturer and distributor inventory increase is not too significant when related to the increase in sales, and also to the fact that some manufacturers began producing 1957 models in July of this year."

While the inventory of room air conditioners is "higher than is desirable," it is not one that "can't be handled without too much disturbance to 1957 sales programs," Jones believes.

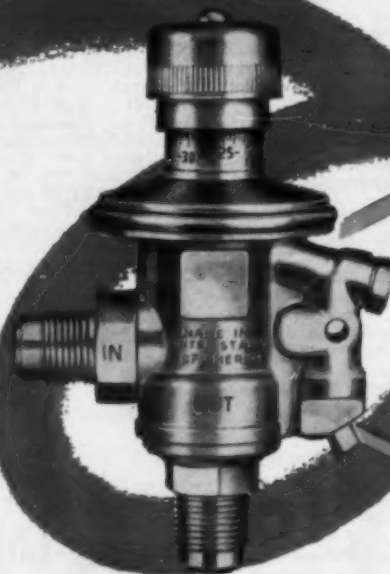
Pointing out that the higher-

than-anticipated inventory was caused by exceptionally cool weather in July and August, Jones emphasized that the industry had set an all-time sales record with only one good month of "air conditioning weather."

This would seem to indicate that two or three extended hot spells next summer might push room air conditioner sales to a new high.


How much of a disturbance to prices and sales programs the carried-over 1956 merchandise may cause will depend somewhat on how much change comes about in the design and styling of 1957 models. Many of the lines will apparently be offering radical innovations in their design and styling, whereas there were not many styling changes in 1956 as compared to 1955 models.

NEED 1/2 OR 1 TON two temperature valve?



Model 235—Evaporator Pressure Regulating Valve — 1/2-ton F12, visual pressure setting from 0 to 40 lbs.

- Also available with 20 to 70-lb. adjustment range.
- Suitable for all refrigerants — 1/4-ton F22, Methyl and Sulphur systems.
- Single diaphragm assures instant response.
- Convenient inlet and outlet 1/2" or 3/8" SAE male flare connections.

**NOW ... choose either one
and get time-saving convenience
plus famous  dependability**

Model 238—Evaporator Pressure Regulating Valve — 1-ton F12, adjustment range 0 to 40 lbs.

- Also available in limited range of 32 to 39 psig.
- Valve disc made of special synthetic compound for Freon service.
- 1/2" SAE male flare inlet and outlet.



ORDER FROM YOUR WHOLESALE OR WRITE:



DEPENDABLE Controls

For Air • Liquids • Gases • Refrigerants

**A-P CONTROLS DIVISION
CONTROLS COMPANY OF AMERICA**

2460 N. 32nd Street, MILWAUKEE 45, Wisconsin
COOKSVILLE, Ontario NIJMEGEN, Holland

This pair of A-P valves is tailor-made for practically any refrigeration installation or service job. There's a choice of capacities ... a broad adjustment range plus positive protection against freezing of water cooling equipment and frosting of air coils. Profit from this application flexibility NOW!